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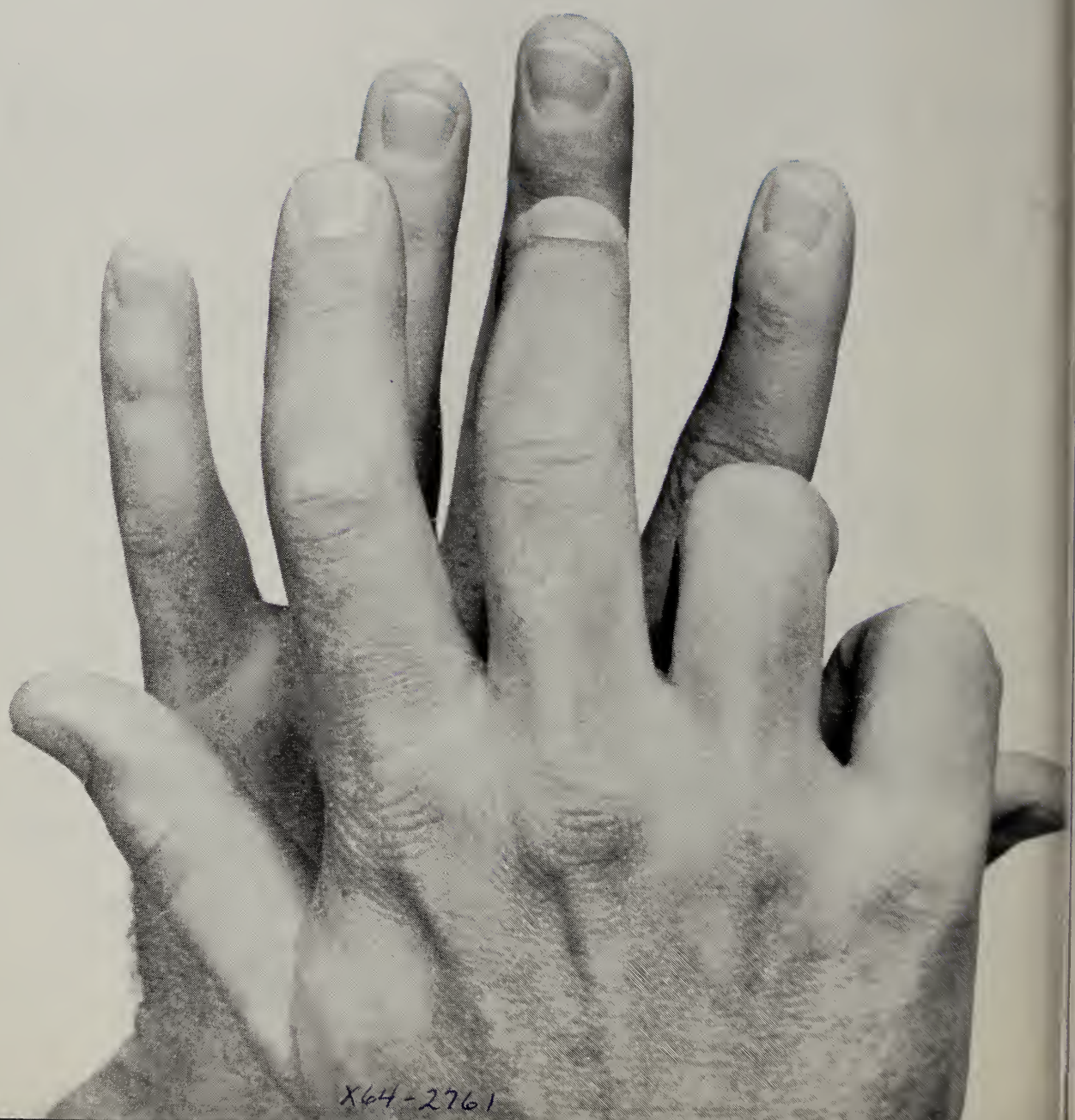

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Uropepsin Determinations And Serum Vitamin B_{12} Levels In A Pernicious Anemia Detection Program*

Mason Trowbridge, Jr., M.D. and Richard C. Wadsworth, M.D.

In describing his "random era of Medicine" Flexner stated that prior to 1912 the average patient, with the average complaint, consulting the average doctor had less than a 50-50 chance of benefitting from the encounter. The cost of diagnostic studies and the increasing ease with which iatrogenic disease is produced makes us at times seem to be slipping back to 1912. But a significant small percentage of patients may benefit from the encounter with a physician provided that the latter orders occasionally a uropepsin determination, and much less frequently, a serum vitamin B_{12} level. The diagnosis of pernicious anemia can thus be made in cases where ordinary clinical acumen would not suggest it.

Our original shaky convictions have been reinforced by the fact that the World Health Organization will soon announce a drive against megaloblastic anemias. We were further heartened by a decision of the authorities in this field at the Geneva meeting this summer. It was felt that much cumbersome laboratory work could be avoided by an actual determination of the vitamin B_{12} level of the serum. After all, what we wish to know is whether the patient's supply is depleted.

Pernicious anemia occurs chiefly in older patients. The incidence of the disease is perhaps 1 per 1,000 of the total population in this country. This figure must be exceeded many fold when one is dealing with the older, sick population of a hospital. We have found that the number of cases detected is a function of the vigor with which they are sought.

Should we rely chiefly on clinical acumen or the laboratory in diagnosing pernicious anemia? It is not unusual to hear a statement on rounds that a patient "probably does not have the disease." Since pernicious anemia can exist with none of the classical signs and no anemia, this statement is as absurd as saying, at the bedside, that the patient probably does not have type O blood. Thus, we need the assistance of the laboratory.

A recent issue of "Harper's" gives a bloodcurdling account of a sick man who went through the mill in numerous fancy American clinics. He was anticoagulated, he refused a laminectomy suggested because of his cord symptoms, and finally went to Ireland to spend his declining days. A physician there noted the sallow complexion and long ear lobes (alleged to be a feature of the disease) and made the diagnosis from his desk chair. Almost every center has atrocity stories of a patient with minimal anemia, a sore tongue considered as secondary to antibiotic therapy — and the patient returns a year later a hopeless neurological cripple. A simple screening test would avoid these tragic and expensive occurrences. But clinical acumen is needed in dealing with an organic psychosis. Dr. Denny-Brown considers the psychosis of pernicious anemia a true medical emergency. The biochemical lesion must be treated with vigor lest it become an anatomical lesion. Dr. Castle recommends vitamin B_{12} injections every three hours in such cases.

We are also interested in sparing those patients who do not have pernicious anemia an arduous and expensive workup.

There are inherent shortcomings in all standard tests used in diagnosing pernicious anemia. Results are often equivocal. But the big objection is that in the hospital they may take up to several days, perhaps ten,

*Presentation at the St. Joseph's Hospital Staff Meeting, October 2, 1962.

in the case of serial reticulocyte counts. This is too much to gamble on a long shot diagnosis. In doing a Diagnex Blue or Schilling (radioactive vitamin B_{12} uptake) test one must keep in mind that the errors compound as the square of the number of nurses, technicians, and orderlies involved in the enterprise. We have had some heartbreaking experiences with 48 hour urine collections on the big wards. Thus, we must concentrate on tests which do not prolong hospitalization or complicate the ward routine.

We need not dwell on gastric analyses; Dr. Damashek finds the test being done infrequently. Certainly we would have a full scale mutiny of patients and nurses were we to use it as a wholesale screening procedure. Furthermore, unless done with great care, many cases are erroneously reported as having no free hydrochloric acid. Kay's augmented histamine test involves fluoroscopic positioning of the tube and serial determination of the pH after very large doses of histamine. The Diagnex Blue test is far less satisfactory in excluding pernicious anemia.

In 1861 a German noted that certain urines would digest beef tendon. His experiments may have been suggested by those of Beaumont thirty years previously. Beakers of Alexis St. Martin's gastric juice digesting venison and tripe graced his mantle piece. Beaumont also tried to make gastric juice from chemicals available at his remote Michigan army camp but failed. His do-it-yourself product lacked pepsin. Although isotope procedures are considered a necessary status symbol for a hospital, it is possible that the simple type of test devised one hundred years ago may be of more practical importance than the elegant Schilling test. The atrophic stomach of pernicious anemia, like Beaumont, cannot manufacture pepsin. Thus, the presence of pepsin in urine renders pernicious anemia highly unlikely. The absence of uropepsin does not, of course, mean the subject has pernicious anemia.

A number of authors have suggested a simple uropepsin test with milk as a substrate to exclude pernicious anemia. Such a screening test is of limited value, however, unless one also has a test which will nail down the diagnosis. It is of interest that even though clinical research is said to be sharply limited in Russia, the use of this type of test is apparently being encouraged behind the Iron Curtain. A Czechoslovakian pen pal writes that he picked up 131 cases of pernicious anemia by using a milk test.

The test that we use was devised by Dr. Harry Segal[1] of the University of Rochester School of Medicine and Dentistry. Appropriately prepared urines of most subjects coagulate buffered milk in 2-10 minutes. Urine from pernicious anemia patients usually fails to coagulate milk in an hour. But Dr. Segal and we have each seen a pernicious anemia patient with values of 25 and 30 minutes. A few megaloblastic anemias which had been diagnosed as pernicious anemia had significant uropepsin; but on further study these proved to be not pernicious anemia but one of the several facsimiles of the disease. We fully anticipate that some pernicious anemia patient, perhaps a juvenile, will show pepsin. As with most tests, we may have to accept an occasional false negative.

Uropepsin values in the pernicious anemia range probably occur less than half as frequently as does achlorhydria, and less than one fourth as often as "Less than 0.3" values of the Diagnex Blue test after caffein stimulus. When we run uropepsins on all anemias in the hospital and on all psychotic oldsters, we often go for weeks without encountering values in the pernicious anemia range. Thus, uropepsins cut down markedly on the number of arduous pernicious anemia workups to be done.

An important thing to know about an anemic patient is whether his body stores of vitamin B_{12} are depleted. Normal subjects have serum vitamin B_{12} levels of 200-800 micromicrograms per c.c. Pernicious anemia patients in relapse have values of 0 to 100. Values in the intermediate range may be difficult to interpret. Vitamin B_{12}, molecule for molecule, is more potent biologically than any substance other than botulinus toxin. Thus, the detection of such minute amounts by standard chemical methods is out of the question. Fortunately, several organisms which multiply in a predictable manner are dependent on vitamin B_{12} for growth. A mixture of the unknown serum and a medium lacking in vitamin B_{12} is inoculated with the test organism. If a luxuriant growth occurs, the serum contains vitamin B_{12}. If no growth occurs, the serum level is 0. Although growth takes a week, we have selected Euglena Gracilis as the test organism. This is one of the algae which, since it produces chlorophyll, requires light. The test is a tricky one, but once ten standards have been set up in duplicate and dilutions of the unknown checked by the photoelectric colorimeter, results should be dependable. We seem to be getting plausible results.

Dr. Victor Herbert of the Thorndike Memorial Laboratory at Harvard Medical School has written an excellent monograph, "The Megaloblastic Anemias."[2] Much of the impetus for our efforts has come from him. He states that a seven fold increase in the number of megaloblastic anemias detected has resulted when routine blood smears are examined for multilobed polymorphonuclear leucocytes. Often there is no other clinical or laboratory evidence to suggest the diagnosis. Pernicious anemia without a typical blood count or marrow is reported often. In every case where Dr. Herbert has been able to borrow smears from the authors, the typical abnormality of the "polys" has been present. We have probably not given this method a fair trial, for our efforts in this direction have been disappointing. Very possibly an Arneth count in conjunction with the uropepsin test will cut down on the number of difficult serum vitamin B_{12} determinations to be done. This abnormality of the polymorphonuclears occurs in both vitamin B_{12} and folic acid deficiency. Uropepsins will pick up only those vita-

min B_{12} deficiency states secondary to atrophy or absence of the stomach. We do not mean to minimize the importance of folic acid deficiency, but we are most interested in pernicious anemia because of the neurological complications. Also, pernicious anemia is familial and it is equally important to know of its existence in a family as to know of the existence of epilepsy.

When a patient is found to have a low serum B_{12} it should not be assumed that he has pernicious anemia. A standard workup including a gastrointestinal series should be carried out. The vitamin B_{12} deficiency may be secondary to an annular tumor at or above the transverse colon. The stasis permits the bacteria to act as does the Finnish tapeworm and gobble up the vitamin B_{12} before the host gets it. But practical problems are encountered. Dr. Edward Babcock and we are currently wrestling with the problem of 8 of the 65 Bangor City Hospital patients who have low pepsins, some of whom have low serum vitamin B_{12} levels. For the present we must have as sophisticated a workup as possible in order to know what our dragnet has picked up.

If and when a study is made at the Bangor State Hospital it may be necessary to somewhat limit the number of diagnostic procedures. Although our ideas on this program are not yet crystallized we at present believe that patients in this group with serum vitamin B_{12} levels below 100 micromicrograms should be treated specifically and the results evaluated. This would seem preferable to depriving these patients of an inexpensive, non-toxic therapeutic agent.

The usual indices for determining the severity of pernicious anemia will probably be too crude to evaluate these patients with low serum vitamin B_{12} levels. Encephalograms and psychometric tests before and after treatment would be of interest. There is an EEG pattern in cerebral pernicious anemia distinct from that caused by anemia. Interestingly enough these changes revert to normal 10-14 days after treatment at the same time that the patient regains his ability to do a "serial seven" test. One of the great dangers of pernicious anemia is that irreversible brain as well as cord damage may occur.

Further methods for speedier and more accurate diagnosis of pernicious anemia are in the offing. Dr. Castle recently described intrinsic factor as "an obscure slime." Its existence has been denied, but antibodies produced against it reinforce the Castle hypothesis and may be the basis of future tests for pernicious anemia. It has been called also "a little fellow with two hands. One grabs on to a vitamin B_{12} and the other to the mucosa of the distal ileum." Manufacture of a lyophilised mixture of Cobalt-60 vitamin B_{12} and guinea pig intestinal mucosa is contemplated. Gastric juice is added to it and the mixture washed. If the mixture remains radioactive, intrinsic factor from the gastric juice is present. The test, like the T3 thyroid test, can be done with no exposure of the patient to radioactivity.

Nobody is completely deficient in intrinsic factor. Pooled gastric juice from several pernicious patients will produce a recticulocyte rise when introduced into the stomach of another pernicious anemia patient. It is reasonable to suppose that as with insulin production, there is sporadic insufficient intrinsic factor production dependent on factors not clearly understood. Much attention has been given to latent pernicious anemia. The newer diagnostic methods may enable us to determine whether there is a state of chronic poor health due to vitamin B_{12} deficiency.

Conclusion

We concur with the World Health Organization that vitamin B_{12} deficiency states are not rare and merit attention.[3]

Some of our energies and funds which are being expended on diseases with no cure in the foreseeable future should be expended in the detection of this potentially fatal disease which can be treated for a few cents a month with 100% success. Eastern Maine has many nursing homes. Since large areas are without physicians, nursing home patients often see no doctor unless some crisis occurs. University friends tell us that we should be working on the unsolved problems of intermediate vitamin B_{12} metabolism. But our greatest hope is that examination of urines and of a few bloods will lead to rehabilitation of a few of these pathetic nursing home patients. Our desire to start studying mental hospital patients is spurred on by an increasing number of reports of pernicious anemia patients receiving electroconvulsive therapy before the diagnosis is made.

Heretofore, vitamin B_{12} levels done on the general populace have not been rewarding. Reports vary on the value of such programs in mental institutions. But public health people have likened such programs to firing a rifle blindly into a patch of woods. If one pulls the trigger only when he sees movement in the underbrush, one may get a deer or something. We believe that in our hunt for pernicious anemia patients we will be more successful if we pull the trigger only when the patient is shown to be deficient in pepsin by a simple urine test.

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NOTE: The authors will be glad to document any of the statements in the article without references.

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Obstetrical Paracervical Anesthesia

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Obstetrical analgesia represents a challenge which yearly brings forth new medications and technics. The perfect regime suitable to all patients is yet to be found. It is necessary for us to be familiar with a variety of methods in order to meet the individual needs of the patient and the obstetrical situation.

The following is not a report of a new method or a new drug. It is, rather, the report of a small local experience with an older method[1,2] made more effective and technically easier by new instruments and new drugs. It is basically safe with few contraindications; widely applicable to the vast majority of patients; completely flexible in that additional analgesics and anesthetics may be supplemented as needed; simple to administer after relatively short experience with the method; and remarkably efficient in a high percentage of patients. Essentially this method relies on 1.) a psychologically prepared patient, and 2.) regional nerve blocks. All other medication or anesthesia is supplemental and only used as an individual need arises.

Psychological Aspects

A "psychologically prepared" patient means only a relatively stable patient having a reasonable amount of confidence in herself and her obstetrical attendants. A formal course of prenatal preparation and conditioning is not necessary — though prenatal programs such as are employed in prepared parenthood, natural childbirth, psychoprophylactic conditioning and hypnosis often enhance the patient's capabilities to the point of making other measures unnecessary. Perhaps the psychologic pre-requisite is best summed up by having a good doctor-patient relationship.

Regional Blocks

The nerve blocks employed are bilateral paracervical block, sometimes referred to as a uterosacral block; pudendal block and/or perineal infiltration. Paracervical infiltration is used to relieve pain of the first stage of labor; pudendal and perineal infiltration, the remainder. The technics of both paracervical and pudendal blocks are described in detail by Kobak and Sadove[3] and are further demonstrated in an excellent film by Kobak obtainable through Winthrop Laboratories. In brief, the technics of both paracervical and pudendal block are made easy as well as safe, by a newly devised instrument, the essential features of which are an 8 inch needle enclosed in an outer sheath during vaginal insertion, which allows the needle to penetrate only 0.7 cm. beyond its sheath in use. The paracervical infiltration is administered when the cervix is about 4-5 cm. dilated. The technic is extremely simple during this stage of labor, as the site of injection is the floor of a large tent-shaped area between the leaves of the broad ligaments, enlarged by the formation of the lower uterine segment, which in addition lifts the uterine vessels well above the depth of the controlled injection.

Ten cc of 1% Mepivicaine®* or 1% Lidocaine®** (without epinephrine) are injected bilaterally at the junction of the lateral wall of the vagina and cervix, at approximately the 3-4 and 8-9 o'clock positions. A time interval of one contraction is allowed to pass between the two injections. The effect is noticeable to the patient on the very next contraction — when only one side has been infiltrated this also is immediately recognized.

The anesthetic effect from Mepivicaine lasts about 1 and one-half hours and for about 1 hour from Lidocaine. Ordinarily this is sufficient as the cervix usually dilates rapidly after administration of the block. Repeat injections at the end of this time can be given if necessary. The pudendal block is carried out when the cervix is fully dilated, using the same anesthetic solution, 10. cc each side. Ordinarily 15 minutes or longer is allowed to elapse between the two blocks, minimizing possible maternal side-effects from rapid absorption of the anesthetic. Perineal infiltration may be done when the head is on the perineum, requiring only 5-10cc of the same solution. Therefore a total of 40-50cc is sufficient and in the following series was never exceeded.

Advantages

1. Provided the relatively few contraindications and precautions are observed, the safety of regional blocks for both mother and baby favor its use. The danger of depressed respiratory function in the newborn is lessened by the elimination or marked reduction of analgesic drugs. The variety of difficulties and dangers of inhalation anesthetics is entirely obviated.

2. The immediacy of effect allows the use of regional blocks late in labor when most analgesics are useless or contraindicated, and when inhalation anesthesia may not be promptly available.

3. The simplicity and safety of the technic favor its use by the obstetrician.

4. The general effectiveness of this form of anesthesia makes its widespread use practical.

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*Carbocaine, Winthrop Laboratories, New York, New York.
**Xylocaine, Astra Pharmaceutical Products, Inc., Worcester, Massachusetts.

5. A fully conscious, undrugged patient is able to cooperate voluntarily especially in the second stage of labor, reducing the incidence of operative delivery.

6. The emotionally uplifting and maturing experience of participating in labor and delivery is of great significance to the majority of women if this can be accomplished in reasonable comfort.

Contraindications

1. Patients with convulsive disorders should probably not be given this form of anesthesia. Although few occurrences have been reported, convulsions have occurred in pre-eclamptics and patients with a history of epileptiform seizures.[4]

2. As in other procedures employing regional anesthetics, excessively large dosages given at one time should be avoided due to possible maternal side-effects including dizziness, nervousness, nausea, convulsions and even cardio-respiratory collapse. Treatment is symptomatic.

3. Epinephrine in the anesthetic solution should be avoided because of its effect on uterine contractility, temporarily slowing or stopping labor. Fetal bradycardia also has been noted, but only when epinephrine was included.

Disadvantages

1. Patients who are apprehensive, panicky, uncooperative or unreasonably fearful are unpredictable with this form of anesthesia. Some are so relieved of pain and discomfort as to be unaware they are still in labor, and their apprehension subsides. Others remain fearful and uncontrollable despite their own admission that they no longer feel any pain. This type of reaction can be only partially combatted by tranquillization — or by any other form of therapy, short of full general anesthesia.

2. Operative obstetrical procedures other than low forceps and episiotomy, may require additional anesthesia for both a sufficient degree of relaxation and pain relief. However, regional blocks do not add to the dangers of terminal inhalation anesthesia, and the benefits of a lesser amount of previous analgesic drugs remain a benefit.

3. The slightly longer time of attendance by the obstetrician may add somewhat to the pressures on his time. But most of these patients deliver within an hour after administering the paracervical block, and his presence during this period is a valuable obstetrical benefit and "the equivalent to a sixth of morphine in relief to the patient."

Results

Thirty consecutive patients receiving transvaginal nerve block anesthesia are reported. All were given a paracervical block for first stage labor pain, to which was added either a pudendal or perineal infiltration for delivery. The series is composed of 9 primiparae and 21 multiparae. Twenty-nine had perineorrphaphies and seven had forceps deliveries, including two Scanzoni rotations of occiput posterior presentations (Table 1).

Paracervical block was carried out in all 30 patients when the cervix was approximately 4-5 cm. dilated. Pudendal block was done in 25 patients when the cervix was fully dilated; the remaining 5 received only perineal infiltration when the presenting part was on the perineum. Thirteen of the twenty-five patients receiving pudendal block also were given perineal infiltration at the time of delivery. (Table II).

Ancillary medication was not required in thirteen of the thirty patients either before or after nerve block; all six patients who had had prenatal training in hypnosis were in this group requiring no other medication. Seventeen patients were given premedication before administration of nerve block, four receiving only a tranquilizer (promethazine* 25 mgr.) and the remainder receiving both a tranquilizer and an analgesic (promethazine 25 mgr. and meperidine** 50 mgr.). After nerve block, no patient needed supplemental medication for pain relief; five required additional tranquilization (promethazine 25 mgr.)

TABLE I
Type of Delivery

	No.	Perineorrhaphy	Forceps
Primipara	9	9	5*
Multipara	21	20	2*
Total	30	29	7

*Including one delivered by Scanzoni rotation.

TABLE II
Type Blocks Used

	Primiparae	Multiparae	Total
Paracervical-pudendal and perineal	4	9	13
Paracervical-pudendal	3	9	12
Paracervical-perineal	2	3	5

TABLE III
Ancillary Medications Used

Total patients		30
No medication (6 used hypnosis)		13 (43%)
Medication before block		17 (57%)
Tranquilizer only	4 (13%)	
Analgesic & tranquilizer	13 (43%)	
Medication after block		5 (17%)
Tranquilizer only	5 (17%)	
Analgesic	0	
Inhalation analgesia (N_2O-O_2)		2 (7%)

*Phenergan hydrochloride, Wyeth Laboratories, Philadelphia, Pennsylvania.

**Demerol hydrochloride, Winthrop Laboratories, New York. New York.

The maximum medication any patient received was promethazine 50 mgr. and meperidine 50 mgr. Two patients were given terminal nitrous oxide-oxygen inhalation analgesia; one to facilitate a Scanzoni rotation of an occiput posterior in a primipara and the other, a Clinic patient, because she had become unmanageable from panic (Table III).

Complications

Complications were minimal and minor. No paracervical block failed to be bilaterally effective and relief of contraction pain was complete in every case. The administration of paracervical block was found to be technically easier and more surely effective than the pudendal block.

Two instances of fetal bradycardia were noted. Both were associated with a cord wrapped tightly around the neck. In one the bradycardia was noted before the paracervical block was given and was only intermittently present immediately after each contraction, suggesting restriction of cord circulation as the mechanism. The second instance occurred shortly after paracervical infiltration and was associated with maternal weakness, restlessness and nausea, suggesting a side effect from rapid absorption of the local anesthetic. Both the bradycardia and maternal symptoms spontaneously disappeared in a few minutes without treatment or further complications.

One neonatal death occurred 9 hours after birth. This was a premature infant delivered at 32 weeks gestation. Only nerve block anesthesia was used. The infant who weighed 4'0", cried spontaneously with marked chest retraction. Autopsy revealed primary atelectasis of the right lung and acute bronchopneumonia.

Comment

The outstanding impression gained from this experience with nerve block anesthesia was the simplicity and effectiveness of this technic. The results of this small, local experience are of no statistical significance, but they compare well with previously reported larger series.[3,5,6] Side-effects were infrequent in occurrence and minor in nature; only one instance of transient fetal bradycardia associated with maternal symptoms seemed definitely related to the administration of the local anesthetic.

All patients experienced adequate pain relief after administration of the nerve block. Slightly over half of all patients required some medication previous to the block but the amounts required were small in all cases. Five patients required supplementary medication for various degrees of anxiety and apprehension after nerve block, though pain relief was entirely adequate; one patient was given nitrous oxide-oxygen inhalation terminally for uncontrollable panic despite the absence of pain.

Analysis of these six cases is revealing. One had had a very long difficult first labor. Cesarean section after a trial of labor was considered a possibility for this delivery. One was in premature labor at 32 weeks gestation and justifiably worried over the outcome. One was a Clinic patient who had never seen her present obstetrician previous to labor. The other three were obviously fearful from the onset of labor though these fears were never clearly identified.

These findings suggest the need for better prenatal preparation on the psychological level, rather than the need for more effective drugs and technics. This is further borne out by the six patients in this series who had specific prenatal preparation in the form of hypnosis; none required ancillary medication either before or after nerve block. It would seem evident that further improvement in results lies chiefly in the direction of better psychological preparation of the patient before labor begins.

Summary

1. A local experience based on recent improvements in obstetrical regional anesthesia is reported. The method depends upon the combination of a psychologically prepared patient and paracervical, pudendal and/or perineal nerve blocks.

2. The series of thirty consecutive cases reported is too small to be of statistical significance, but the findings bear out the results of other larger series.

3. The method and technic as outlined is safe, simple and effective with a minimum of side-effects.

4. Ancillary medications may be used when necessary, but were chiefly needed in early labor before administration of the nerve blocks. The amounts of such medication required were uniformly small.

5. Better results were obtained with psychologically prepared patients; further improvement seems possible when additional emphasis is placed on the doctor-patient relationship or through more formal psychological preparation.

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Case Reports Of Severe Penicillin Resistant Hemolytic Staphylococcus, Coagulase Positive, Infection

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The following three cases are reported as a reminder that severe infections from penicillin resistant hemolytic staphylococcus aureus, coagulase positive, often with widely disseminated complications continue to enter the hospital. Penicillin G remains the agent of choice in the treatment of sensitive staphylococcal infections. However, the percentage of penicillin G resistant organisms continues high, particularly with in-hospital infections. Despite recent, effective antibiotics, morbidity may be extreme and a significant mortality remains.

Case No. 1

J. B. (E.M.G.H. #95602) is a case of widely disseminated infection caused by hemolytic staphylococcus aureus, coagulase positive, with cavernous sinus thrombosis, extensive bilateral pneumonia, osteomyelitis, positive urine culture all originating from a small furuncle at the left corner of the mouth. Recovery was felt to be largely due to the effects of vancomycin. This is a 12-year-old girl who on September 27, 1961, twenty days before transfer to Eastern Maine General Hospital, developed a small furuncle at the left corner of the mouth with rapid progression of induration, surrounding cellulitis and swelling of the entire face. She was hospitalized within 36 hours. Culture of the original furuncle grew hemolytic staphylococcus aureus as did subsequent cultures of furuncles on the left cheek and forehead and of the urine. Antibiotic therapy was started as outlined in the accompanying graph and incision and drainage of the initial and subsequent superficial furuncles was performed. Despite this there developed progressive signs of cavernous sinus thrombosis and septicemia as evidenced by bilateral pneumonia, osteomyelitis of the left ankle, a positive urine culture and x-rays suspicious of left frontal osteitis. Four units of whole blood were given. She was transferred to the Eastern Maine General Hospital on October 18, 1961.

At the time of transfer the blood pressure was 116/72. Pulse 80, regular. Resp. 20. The patient was obviously sick. There was discoloration and venous engorgement about the left eye with residual evidence of recent furuncles on the left cheek and forehead. The original furuncle at the left corner of the mouth had cleared. Optic fundi showed slight venous engorgement on the left. There was paralysis of the left lateral rectus muscle. Vision was normal. There were several carious teeth. Percussion was dull to flat at the right base, less so on the left. Breath sounds were decreased to absent at the bases, more on the right. There were distant bronchial breath sounds posteriorly on the right. No rales were noted. A Grade I systolic murmur was heard at the apex. The abdomen was slightly distended. No organs were palpable. There was a deep incisional site over the left lateral malleolus 1 and one-half inches in length extending to the bony surface. There was an area of disseminated infection in the skin over the sacrum. The cerebro spinal fluid showed increased cells and protein.

Hct. 46%. WBC 11,100. 65 neutrophiles; 1 eo; 4 bands; 30 lymphs. Urine negative. Cultures of the sputum revealed hemolytic staphylococcus aureus, coagulase positive, resistant to penicillin, partially resistant to erythromycin, chloromycetin and terramycin. Two urine cultures at this hospital were negative. Repeated blood cultures were negative. BUN 10. Cerebral spinal fluid the day after transfer revealed 159 WBC, 56% small mononuclears, 3% large mononuclears, 41% polys. RBC 70 per cubic mm. (fresh). Protein 61. Spinal fluid showed no growth on culture. The x-ray at the time of transfer showed extensive bilateral pneumonia with progression since previous outside films of October 16, 1961. These x-rays plus the predischarge films are demonstrated in Figure 1. An x-ray of the left external malleolus is shown in Figure 2. The October 16 chest film showed enlargement of the spleen.

The patient was started on 10,000,000 units of aqueous penicillin and 2 Gm. Chloromycetin® intravenously every 24 hours and Erythromycin® 500 mgm. q.i.d. by mouth. Penicillin was increased to 40,000,000 units and erythromycin was started intravenously the next day awaiting culture and sensitivity studies. When these were reported as revealing that the organism was resistant to penicillin, these drugs were abandoned and Vancomycin® was started intravenously 2 Gm. daily. The drug was administered as 500 mgm. in 250 ml. of saline solution every 12 hours rapidly and 500 mgm. in 1000 cc. 5% Dextrose/Water extending over each period between the rapid infusions. The antibiotic schedule is outlined in the accompanying diagram.

On the day after her admission a trephine approach was made to the left frontal sinus with negative findings. A lumbar puncture was performed at this time and is described above. Over the next few days there was progression of proptosis and paralysis of the 3rd, 4th, and 6th nerves on the left giving complete opthalmoplegia. On the 5th hospital

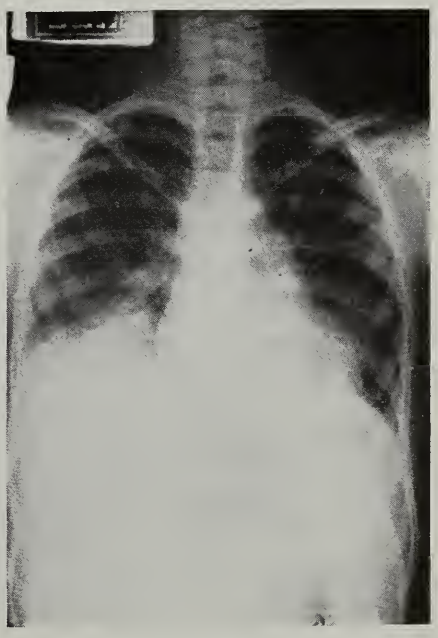


Fig. 1-A. October 16, 1961

*From the Medical Service, Eastern Maine General Hospital.

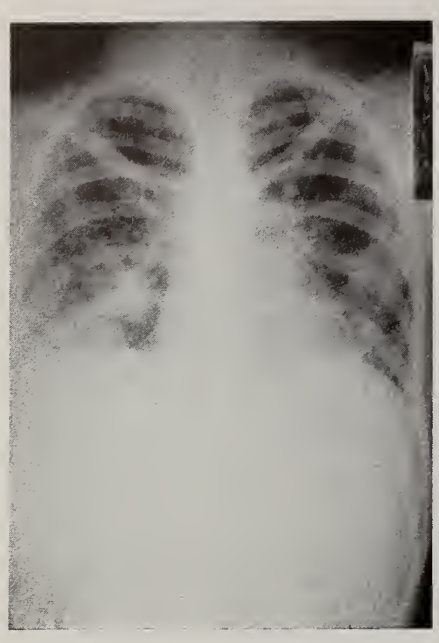


FIG. 1-B. October 18, 1961

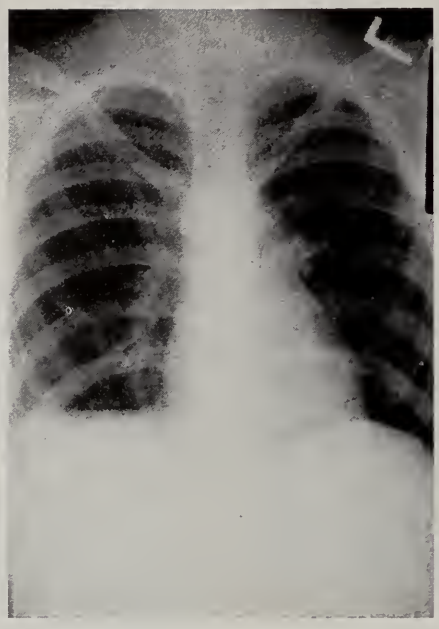


FIG. 1-C. November 28, 1961

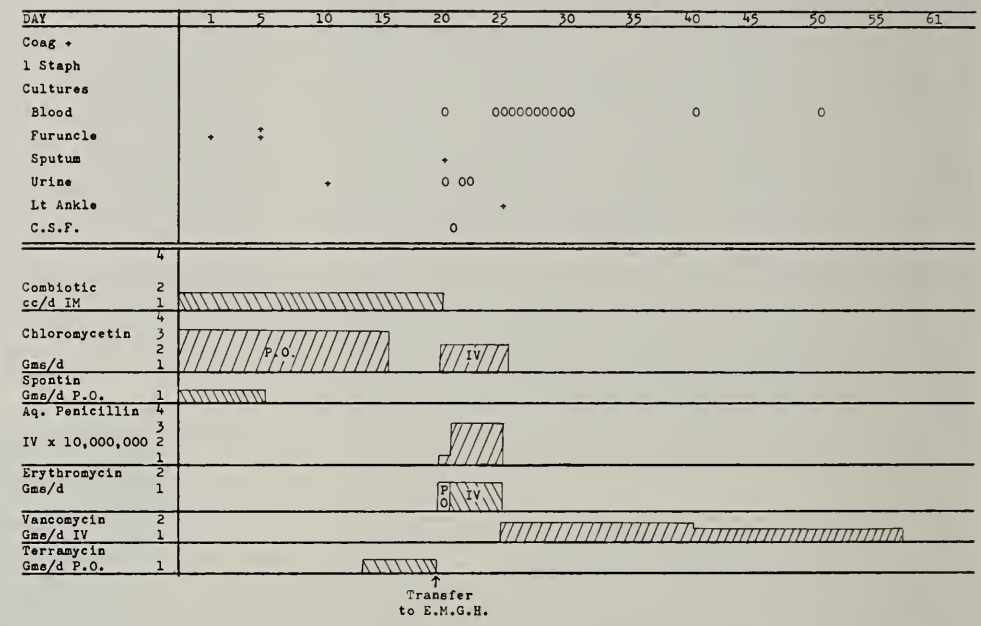
FIG. 2. October 31, 1961

day a left orbitotomy was performed to exclude an abscess in the apex of the left orbit. The findings were negative as was a culture.

Vancomycin was administered continuously as described for a four and one half week period though after two weeks it was decreased to 1.5 Gm. daily. Since anti-coagulation was felt indicated for cavernous sinus thrombosis, heparin was administered in the above infusion thereby hoping also to counteract the thrombophlebitic effect of vancomycin. Several episodes of thrombophlebitis did occur requiring new cutdowns.

Except for continued headache and tachycardia of 110-120 both of which persisted until discontinuation of vancomycin and the thrombophlebitic tendency there were no ill effects that could be attributed to the drug. The BUN remained normal on three times weekly determinations. No clinical decrease of hearing could be observed though audiograms were not done.

DIAGRAM NO. 1, CASE NO. 1



There was slow but progressive improvement of all areas of involvement. At the time of discharge on November 28, 1961, forty-one days after transfer to E.M.G.H. there was essentially complete clearing of the lungs. There was good healing of the left fibula and the cast was removed prior to discharge. There was no further evidence of renal infection and the superficial infections had all cleared. The edema of the face had cleared entirely. However, the patient was left with a complete left opthalmoplegia with vision otherwise unaffected. Because of the duration it was felt that return of function was not likely. However, approximately four months after discharge there was beginning motion of the left eye and at this writing there is approximately 40% return of function of the extra occular muscles.

Periodic follow-ups since discharge have shown no recurrence of infection though there has been a small amount of superficial drainage over the site of the old osteomyelitis particularly when bruised.

CASE NO. 2

S. M. (E.M.G.H. #791): A 76-year-old farm laborer was admitted to the Eastern Maine General Hospital on April 1, 1962 with a four day history of malaise, cough and fever. He had been examined in the out-patient department one day prior to admission — at which time the temperature was 102 degrees, the lung fields were clear, a chest x-ray was negative and the white blood count normal except for a slight shift to the left. It was thought that he had influenza. Rest, fluids and no antibiotics were prescribed. He had taken little fluids for several days. There was no recent alcoholic intake and he had worked until four days prior to admission. There was a past history of pneumonia about five years pre-

viously. No further history was obtainable from this acutely ill patient who was confused and unable to identify relatives on the day of admission.

Examination revealed an acutely-ill, elderly, unclean male with a blood pressure of 90/70; pulse 96 and irregular; temperature 103.6 (R); respirations 30. The mucous membranes were parched, the neck held voluntarily stiff. The abdomen was diffusely tender. Bowel sounds were present. There was no sacral or ankle edema. Neurological examination revealed an intact gag reflex, response to painful stimuli, but marked lethargy and confusion precluded further neurological testing.

Laboratory studies included a repeat chest film that was again negative; white blood count 6700 with 61 neutrophiles, 1 band, 38 lymphocytes; urine S. G. 1.008 — negative sugar — 4 plus albumin, 3-5 wbc/hpf, diastase 16 units; serum CO-2, 18 meq/liter, BUN, 108 mg%, hematocrit 36%; ECG showed no gross abnormalities except frequent auricular, ectopic beats; cerebrospinal fluid protein, 61 mg%, 15 polys, 8 mononuclear cells, 65 rbc's, culture grew two contaminant colonies only; cultures of the throat, blood and urine were all positive for hemolytic staphylococcus aureus; coagulase positive. The organism was resistant to penicillin but sensitive to staphcillin, vancocin, chloramphenicol, erythromycin, novobiocin and tetracycline. Febrile agglutinins were negative.

The initial impression was fever of undetermined origin with presumed underlying bacterial infection. After the cultures were obtained, a Foley catheter was left in place and the patient begun on large doses of tetracycline and penicillin, intravenously (see Table I for details). Staphcillin was begun the third day. Chloramphenicol was added the fourth day and penicillin discontinued. Kayexalate (a*), 40 grams in 2 ounces of water, was given by retention enema every 6 hours beginning the fourth day.

His course was that of acute renal failure with progressive uremia and acidosis. Petechiae were noted in both conjunctivae on the third day and an apical systolic murmur was heard for the first time. The abdomen became less tender; the spleen remained unenlarged to palpation. By the fifth day, the BUN was 238 mg% in spite of a large urine output — see Table I. The patient became increasingly acidotic as manifested by rapid respirations and falling serum CO-2 in spite of the fact he was receiving from 80 to 340 milliequivalents of sodium daily (as NaCl and $NaHCO_3$). Marked sodium diuresis (? wasting) was demonstrated the fourth day with an excretion of 235 meq.

Peritoneal dialysis[5] using Inpersol (b*) with 1.5% dextrose was begun on the sixth day. It was hoped that dialysis would more accurately correct the severe acidosis than was being accomplished with intravenous fluids. He was digitalized and given 500 cc's of whole blood on the sixth day because of a drop in blood pressure, decreased venous filling and decreased urinary output.

After 16 liters of dialysis over a 10 hour period, there was some apparent improvement; the blood pressure changed from 85/70 to 110/70. He was more alert but the respirations remained 40. The serum CO-2, drawn about 2 hours before his demise, when the dialysis had been in operation about 9 hours, was 14.5 meq; BUN 205 mg% (238 mg%, 2 days previously). The cause of the somewhat unexpected, sudden cessation of respirations on the morning of the seventh day is obscure.

The clinical diagnosis at the time of death was acute bacterial endocarditis with septicemia, acute nephritis probably superimposed on chronic renal disease (with uremia).

Post-mortem examination demonstrated hemorrhagic, friable vegetations on the mitral valves and a superficial subendocardial abscess of one of the posterior papillary muscles, 1.2 cms. in greatest dimension. The kidneys had granular, blotchy, red surfaces and were studded by tiny, gray-white, poorly defined nodules. On gross section, tiny, ill-defined, gray-white nodules were noted throughout the parenchyma and appeared more numerous in the pyramids. The renal findings were consistent with acute, suppurative, nephritis. There was evidence of acute pharyngitis, tracheitis and bronchitis.

Case No. 3

G. H. (E.M.G.H. #99563): This 78-year-old white widow was admitted to EMGH for the first time on 2/23/62 and discharged on 3/22/62 after having a duodenal polypectomy. She was re-admitted March 28th and discharged on May 1, 1962. Diagnosis: Staphlococcus pneumonia.

First admission was for dizziness of an ill-defined character with the admission physical revealing a reasonably well-developed female with unremarkable findings. There was no evidence of cardio-respiratory disease.

(a*) Kayexalate (RTM Winthrop) — Sodium Polystrene Sulfonate

(b*) Inpersol (RTM Abbott) — Contains
140.5 meq. Na 101 meq Cl.
3.5 meq. Ca 44.5 meq lactate.
1.5 meq. Mg

Table No. 1, Case No. 2

Date 1962	Vital Signs				Blood Values						Intake				Output cc	Medications						Remarks
	BP	P	R	T	Urine S.G.	Hct	K	Cl	CO_2	BUN	Meq NaCl	Meq $NaHCO_3$	Calories	Vol. cc		pen	tetra	chlor	staph-cillin	Kayex-alate	digi-toxin	
4/1	90/70	96	30	103	1.008	36	-	-	18	108	120	-	450	3000	270	10M U	2 gm IV	-				
4/2		88		100		38	4.9	92	12.8	144	80	-	300	2000	670	"	"					Blood sugar 165 mg%
4/3		84	36	102		41	5.8	97	10.5	182	340	-	450	3000	1650	"	"		2 gm IM			
4/4	105/65	80	34	98[6]		41				220	-	88	400	1500	2700	"	1 gm IM	3 gm IV	"			petechiae rales R base
4/5	100/80	84	36	99		43	5.9	95	8.8	238	150	88	600	3000	2150	0	"	"	6 gm IM	160 gm pr		24° Na excr 235 meq
4/6	85/70	100	39	98[6]		37					40	88 (500 cc W/B)	250	1750	900		"	"	"	"	0.8 mgm	Peritoneal dialysis
4/7	114/64	96	40	99		40		97	14.5	205												

The initial hematocrit was 35%, a repeat 33%, WBC 7,300 with a normal differential. A mild anemia was investigated thoroughly including bone marrow aspiration and no well defined etiology was ascertained. Gastrointestinal studies revealed a duodenal polyp and cholelithiasis.

Initial urinalysis showed 30-40 WBC per/hpf and 10 mg.% of albumin. Staphylococcus aureus (coagulase negative) was found on urine culture, which was resistent to penicillin, but sensitive to tetracycline, staphcillin, vancocin, furodantin, and novobiocin. On March 3rd Tetracycline 1 gm. qd. was started and maintained for four and one half days and on the same day Kynex was initiated for three days. No IVP was done.

Fourteen days after admission (3/9/62) a duodenal polypectomy was done under pentothal, nitrous oxide and quelicin anesthesia. The Levine tube was removed on the second postoperative day. Review of the record reveals that she had a temperature of 101.2 on her 8th post-op. day and a "cold" with mild cough. The temperature had returned to normal by the day of discharge, which was her 12th post-operative day. No pulmonary findings were noted on the chart. The admission chest x-ray which showed only a small amount of apical fibrosis was not repeated.

She was discharged on 3/22/62 approximately twenty-seven days after admission, and at home her cough increased in frequency and produced yellow to green sputum. Left pleuritic pain and fever developed. The family physician gave her tetracycline three days prior to admission without improvement. The admission to EMGH was accomplished on March 28, eighteen days after her operation.

On admission, she was found to be a very thin, chronically ill, tachypneic female with a loud friction rub over the left lateral chest and other physical findings compatible with bilateral pneumonic process. The chest x-ray showed pneumonia involving the right upper lobe, right middle lobe, lingular segment of the left upper lobe and the left lower lobe and an associated left pleural effusion. WBC was 18,200 with a shift to the left and the hematocrit was 38%. Throat and sputum cultures revealed hemolytic Staph. aureus, coagulase positive which was resistent to penicillin and tetracycline, but sensitive to staphcillin, vancocin, furodantin, and neomycin. Two blood cultures were negative.

The patient was treated for Staphylococcus pneumonia with staphcillin 4 gms. daily, intra-muscularly, for 6 days followed by ten days of prostaphlin by mouth, the first four of which was 3 gms. and the last 2 gms. per day.

After a very stormy initial several days, the patient progressively cleared all of her symptoms and most of her physical findings.

The second chest x-ray was suggestive of multiple small cavitations in the left lower lung field which were later revealed to be small amounts of loculated pleural fluid. An aspiration of a small amount of this clear material was negative on culture. No further thoracenteses were done and the serial films revealed striking clearing, bilaterally. After discharge, on her 34th hospital day, the patient has continued to do well and follow-up chest x-ray revealed only a small amount of residual fibrosis bilaterally.

It is of interest to note that a papular erythematous itching erruption developed on her thorax on the sixth staphcillin day. It became somewhat coalescent and extended to the extremities, but was never severe. WBC was 12,200 with 15% eosinophils. A dermatologic consultant felt that this was probably not a drug reaction but a contact dermatitis. The prostaphlin was continued in an uneventful fashion and the rash for the most part faded. The treatment consisted only of anti-histaminics and topical applications of calamine.

Other laboratory studies during the patient's hospitalization were essentially unremarkable.

Discussion

Three cases of severe penicillin resistant hemolytic staphylococcus aureus, coagulase positive, infection have been presented. The known effectiveness of two drugs, vancomycin and methicillin (staphcillin) is demonstrated since the two surviving cases might well have been expected to succumb prior to the availability of these two drugs. At the time of admission of Case No. 1, vancomycin was being reported as the most effective antibiotic for penicillin resistant staphylococcus.[1,4] At present vancomycin, methicillin and oxacillin (prostaphlin) are all reported as agents of choice.[6,7,8,9] The latter two have the advantage of easier administration. Because of low absorption, vancomycin must be given intravenously for systemic distribution. The advisability of placing a polyethylene catheter in a large vein to lessen the tendency to thrombophlebitis involves a constant IV drip, in Case No. 1 for a period of four and one-half weeks. All three drugs are potent bacteriocidal agents. Methicillin and oxacillin are semi-synthetic penicillin analogues which are resistant to the action of penicillinase. Because oxacillin is also resistant to acid, it is given orally. Until further reports are available oxacillin may best be used in the primary treatment of less severe staphylococcal infections but probably should be preceded by a course of methicillin in more severe infections[8,9] as was done in Case No. 3. Case No. 2 died with acute bacterial endocarditis including an abscess of a papillary muscle despite methicillin. Acute nephritis complicated underlying chronic renal disease. Case No. 3 recovered on methicillin and oxacillin therapy. On the basis of existing reports, resistance to any of the drugs does not appear to be of clinical importance. Toxicity from vancomycin may be troublesome, particularly local thrombophlebitis, but is only infrequently serious under control conditions. Both methicillin and oxacillin show minor toxic effects in approximately 40%, and reactions severe enough to discontinue the drug in approximately 10% of cases.[9] The severe reactions are generally similar to those experienced with those of penicillin G. Despite these encouraging features a definite mortality remains particularly in debilitated patients with other underlying disease.

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(*Continued on Page 18*)

Plastic Implants In Rabbits

Preliminary Report

Paul R. Briggs, M.D., Elias R. Nawfel, D.M.D.,
John M. Woodcock, D.V.M. and Harold L. Chute, D.V.M.

A variety of plastics have been inserted in animal tissue for many years; some with untoward results, others have been apparently benign.

The authors elected to study the effects of certain plastics on rabbit tissues in a series of experiments involving tooth socket, subcutaneous tissue and gastrointestinal mucosa. The rabbit was chosen because of the shape and size of its teeth, and the similarity of its oral PH to humans. Its teeth are not deciduous, but grow exfoliative, wearing down, and constantly forming new cells of a highly proliferative type in the dental socket. Blood studies were carried out on cadavers as an incidental co-study, without reference to plastics.

The project was concerned at first with implanting synthetic (plastic) teeth in rabbits to replace those which had been extracted. Several instances of this have been reported in humans, but, to our knowledge, no animal histological studies of this nature are available. A review of literature involving subcutaneous implants led us not only to attempt to implant synthetic teeth but also to expose the gastrointestinal tract and subdermal tissues to plastics. We selected various types of polymers and the results were tabulated.

It has been noted that there is an increase of recognized human malignancy in recent years and probably more actually exists than previously. Today we are using plastics for nearly everything. We eat from plastic dishes, drink from plastic cups, get our food in plastic containers, processed by machines that contain or utilize these compounds. Our contact lenses and our eyeglass rims are made of plastic. How many times have we recognized a carcinoma which developed at the site of contact with our visual aid rims, nose piece and bows (on the bridge of the nose, on the ear, or in the line where this strikes the skin across the face)? Presumably it may be coincidental or it may be due to the action of a plastic or its disintegrating compounds. Most of our artificial dental plates are made of plastic.

We attempted to apply the premise that certain plastics are soluable in alkalies, acids, acetone, or alcohol. All these chemicals are present in varied concentrations throughout the gastrointestinal tract or tissue fluids. It is for this reason that the material was subjected to a varied PH, alcohol and acetone environment to determine whether exposure to synthetic compound as such, or the products of its material breakdown might result in the development of malignant lesions.

Due to the peculiar curve of the rabbit's tooth, it is easily held in place without the aid of pins and can be crowned after the implantation has solidified. The same crowns have been used in steers. Where the teeth have eroded, a crown is built up to enable the animal to eat properly and thus live longer.

Our primary interest was motivated by the thoughts regarding the type of tissue formed around a plastic implant and whether there was an actual union between this and surrounding tissue. However, granting that some union takes place, the length of time for it to become solid seemed pertinent and whether or not there was any effect upon the bone and soft tissues which were proximal to it, seemed important.

A secondary experiment which involved the use of plastics in the donor and recipient sets, has been performed, by crossmatching blood samples. The rabbits were sacrificed by electric shock. The rabbit was then bled and the blood, after careful testing, was transfused into a previously bled living rabbit. This same blood was administered to both non-related and related rabbits, providing crossmatching was compatible. The Russians claim to have been using cadaver blood for transfusion purposes with good results. The fact that a deceased person's blood goes down the mortician's drain does seem a waste of a fluid that would save many a life if it was available.

All animals were tatooed for identification purposes and records were made of the type of plastic used, location, length of time, PH, sex, weight, psychological attitude, date of sacrifice, results of tissue readings and other pertinent factors. Intravenous Sodium Nembutal® appeared to be superior to Pentothol® and was better tolerated by this particular rodent.

The rabbits dental mechanism, especially the incisor, is worthy of comment. They have a peculiar shape and the lower jaw, like other rodents, gives a chewing and gnawing motion. Here there is a wide angle of action starting in the tempero mandibular joint which allows it to have a back and fourth movement as well as an up and down one. The incisor is occasionally deformed and when mal-occlusion takes place, the animal may starve to death. If placed on a soft diet, the rate of growth is proportional to the wearing off of the end of the tooth, but when these teeth are subjected to hard use, the loss of length is compensated for by highly active tissue at the base and the enamel, dentine, and cementum form at the same time.

These same incisors are permanent teeth and depend

on the peculiar proliferative cells at the bottom of the socket. This constant source of growth is called the odontogenic epithelium which is germinal tissue. Cellular activity is more rapid on the labial side than on the lingual and this makes the tooth curved. Actually they have no roots but a potent crown is evident. The replenishment of the length is similar to that of hair in that it may be cut off but grows from the base to make up the loss. The extraction of these teeth is difficult but possible with patience and dexterity.

Evidently with plastic implants the odontogenic layer does not proliferate to the extent that it pushes the artificial tooth out for we have maintained synthetic substances in the socket for more than 14 months without extrusion.

All these organic synthetic substances are not alike. Some are resins. These are usually pliable, ductile, malleable and adaptable and are often formed by chemical condensation or polymerization. Many are derivatives of coal tar radicals, but previously have been accepted as made harmless by the chemical polymorphosis.

Long term studies on grafts of Nylon, Dacron, Orlon and Teflon replacing large blood vessels in dogs revealed the latter three maintained their strength for a period of about two years, whereas Nylon gradually lost strength. Teflon was, due to its chemical inertness, considered the synthetic material of choice in vascular prosthesis according to Harrison.[8]

Delayed bleeding was noted through the interstices of grafts composed of Nylon, Dacron, and Orlon. A Teflon graft at 22 months showed complete healing, being completely enclosed in a thin layer of fibrotic tissue on the inner and outer surfaces which was continuous through the interstices of the weave. No malignant cells were noted in Harrison's work.

Literature contributed by B. S. Oppenheimer, et al, showed definite malignant changes discovered accidentally while attempting to produce hypertension in rats by wrapping cellophane film around one kidney. At the end of two years, seven developed tumors at the site and in the perirenal area. Microscopic slides proved the neo-plasm to be a fibrosarcoma. This same phenomena had been reported a few years previously when Bakelite was implanted subcutaneously by Turner.[11]

No explanation was forthcoming for the tumor formation in either Turner[11] or Oppenheimer's[9] work and the higher percentage of neoplasms were found in the latter's implantations of pure polyethylene "B" rather than commercial polyethylene "A" which rather ruled out impurities. Chronic mechanical irritation was eliminated from the friction standpoint.

Again in 1953, Oppenheimer,[10] et al, reported various plastics related to malignant tumors from subcutaneous implants; these consisted of fibrosarcoma, rhabdomyosarcoma, liposarcoma, osteogenic sarcoma, reticulum cell sarcoma, lymphosarcoma; rhabdomyosarcoma, atypical; undifferentiated sarcoma, plasmocytoma, histiocytoma, myxoma, malignant mesenchymoma and finally two non-malignant granulomas.

Druckrey,[1] following Oppenheimer's original report, induced sarcomas with cellophane and cellulose, as well as polyamide films. It was estimated by Oppenheimer, that it took one to two years for a malignant tumor to appear in the rodent but that the same might result after a much longer exposure in the human, possibly as long as ten to fifteen years. This same author subjected rats and mice to cellophane A, cellophane B polyethylene, polyvinyl, cellophane C Silastic, Teflon, Nylon, Dacron, Polystyrene; all elicited tumor formation.

In considering wound healing versus plastics Postlethwait[3], et al, used rabbits to test catgut, silk, cotton, wire, nylon, ramie, nymo, dacron, and teflon, all of which were studied for tensile strength and histologic reaction. The catgut was found much the same as the non-absorbable type until absorption began at which point tissue reaction increased and the tensile potency decreased but the sutures of a synthetic type apparently caused little inflammatory reaction and remained strong. Here again Teflon proved superior in both properties. The plastics tended to unite and the knots slip.

The time factor seems to be the main one in the production of tumors related to plastics. Many of the previous investigators appear to have made their histological studies too early to find neoplastic changes. Neoplasm formation has been apparently predominant in connective tissue in contact with plastic.

Working with Teflon grafts in growing pigs, Girwin[2] and his colleagues found the material chemically inert and non-permeable. These experiments showed no abnormal reaction in this animal and an endothalial type membrane was produced over the interior of the prosthesis and a fibrous layer of tissue evolved around the exterior, the latter strata being non-calcific.

Hodosh[12] writing in the J.A.D.A. and the Rhode Island M. J. describes preliminary reports on implantation of teeth (plastic) in humans. Some difficulty appeared with the retention of the denture in the socket. It was somewhat stabilized by the addition of pins. The results were followed by x-ray.

Carl Cohen[13] and P. B. Swain[14] have reported on the blood groups and genetic linkage of blood types in the rabbit. The subject is well covered and it is obvious that many types exist. Crossmatching in our limited experience appeared sufficient even with rodents of different strains, as our sera was mitigated.

In regard to Bovine Crowns the Newcomb[15] reports in Veterinary Medicine indicated the feasibility of crowning plastic implants after they had become solid. This investigation after two years of study, made available to the veterinary profession the practicability of stainless steel crowns to arrest premature abrasion and insulate the hypersensitive nerves of the incisor by the employment of dental adhesive. It was designed to increase the life span of cattle where the teeth are worn or wearing sufficiently to prevent the animal from eating

properly and to protect the bovine cripple or abort the potentiality of such a circumstance.

Edwards, et al, published material on crimped Teflon graft for vascular prosthesis and applauds this plastic because it loses little, if any, strength in prolonged periods and apparently excites a minimal amount of tissue reaction, allowing stability versus a fairly rapid healing of the neointima. He compares this with Nylon, Orlon, Vinyon, and Dacron. This same lining is more or less complete in a matter of weeks whereas its plastic counterparts require months for attachment. Woven crimped tubes made of Teflon have a low porosity and eliminates the oozing problem through the graft.

Gonzalez[6] in 1958 reported Teflon to be quite the opposite from a non-reactive. He found, in fact, a visible reaction, some slight whereas others were maximal. He considered the material unsatisfactory for use as a blocking mechanism or a pulley substitute in tendon surgery.

Stig Ekeström[5] performed experiments which were published in 1955 as a preliminary report of Intrathoracic Trachea reconstruction in dogs with fascia supported by Teflon. He implied that the reinforced fascial graft with Teflon gave adequate rigidity and tracheal epithelium regeneration was not complete in the limited number of dogs subjected to this type of surgery at the time of his early, incomplete and inconclusive deductions. The type of suture material directly seemed to effect the anastomosis final results, for here he used silk stainless steel and catgut.

Usher and Wallace[4] reported on tissue reaction to plastics in 1957 using 15 dogs. They employed Marlex, Nylon, Orlon, Dacron, and Teflon using 10 grams of a substance in the peritoneal cavity of each member of the canine group. Three of the animals were given NYLON which apparently gave multiple adhesions and inflammatory end results. ORLON produced firm adhesive results in much the same way and both the Nylon and Orlon stimulated fluid collections. The Orlon, however, histologically presented fibroblastic and foreign body reactions with young connective tissue cells as well as those of the reticulo endothelial variety.

DACRON produced filming adhesions, serosanguineous fluid. The scar tissue was adherent only by fibrinous exudate. There was a marked increase of young fibroblasts and some giant cells.

TEFLON presented a similar picture of filming adhesions with giant cells formation indicating foreign body reaction.

MARLEX elicited no adhesions, some free fluid and little gross reaction but microscopically fibroblasts and suggestive connective tissue cells. There was little inflammatory change.

In our project, we have implanted and later sacrificed some of our rabbits. Many have had plastics in them for more than 14 months, others have been fed plastics for one year, and these are still living.

It is our belief that if these compounds are as carcinogenic as others have reported, the conditions must vary with the size and type of the animal, the time interval, and possibly the type of plastic used. We therefore decided to continue our experiments over a long period of time and repeatedly implant and autopsy as the pendulum swings, watching the live animal closely for tumor formation as well as abnormal behavior. The dead will be observed histologically for changes undetectable and unobserved clinically.

Psychologically we have noted that our implanted subjects are placid, well nourished and apparently contented, whereas the animals fed plastics, especially *Textron* plastic, are restless and wild, walking about like caged tigers. It seems a bit early to sacrifice these but when we do the whole rabbit will be examined carefully, including the brain.

The transfused rodents were crossmatched with their potential cadaver donors and the blood was typed against human sera which turned out to be RH negative type AB even in unrelated animals. When we took the dead rabbit's blood after an electric shock, we tried to follow the Russian method by taking the blood under sterile conditions via the jugular vein with the head down and then wash out the vascular tree via the arterial side. No complications were noted in any rabbit that was transfused except one in which we let the blood run in too fast without any pretransfusion bleeding whatsoever. The latter animal died with blood gushing out of its eyes, nose and various other places which we attributed to overload rather than reaction.

Shortly after the original implantations, we noted large palpable tumors at the site but these subsided and when we sacrificed animals at varied intervals from two weeks to over 52 weeks, implants of Teflon, Textron, Nylon, Dermalon and Dermal showed no foreign body or inflammatory reaction; there was no sign of carcinogenesis but moderate fibrosis was noted around most of the material. Only one subcutaneous insertion developed an abscess. The teeth (plastic) were apparently held in situ by almost immediate fibrosis and stayed in the socket well, walled in by this orderly growth of tissue. There was no union between the implant and surrounding area but the synthetic teeth appeared well enveloped and more or less fixed in two weeks.

Menkin[17] writing in the British Medical Journal rather supports the inflammatory theory of Carcinogenesis. Here he hypothesizes that an inflammed area sets free what he calls "chemical mediators" derived from injured cells. He concluded that these substances are present in exudates and possibly accounted for repair along with elements from circulatory blood. Experimentally he found that the substance obtained from the inflammed pleural cavity of a rabbit if injected at intervals into the ear or breast of this rodent produced nodules that prove to be proliferative in character, arising from the perichondrial area and which take on a metaplastic bone transformation. The epithelium it-

self becomes also metaplastic and tongues dip deep in the corium. However, with a control serum, which is not of inflammatory origin, there is no change in the cartilaginous plate nor is there any change of tissue structure when irritants are injected and the inflammation subsides, for there is no exudate which contains the mediator. He outlines a method for dialyzing the material so that the growth promoting factor is more concentrated. This he assumes instigates repair and acts as a co-carcinogen when it is introduced along with a carcinogenic hydrocarbon, one of which he specifically notes as methyl cholanthrene.

The new growth is assumed to be the result of several conditions including heredity aided by the growth promoting substances so commonly found in exudates which acts in its co-carcinogenic role. Chemical tests point toward the nucleo-peptid structure of the latter.

Finally this growth factor in itself will not produce neoplastic results unless a carcinogenic hydrocarbon is present in order to contribute its co-carcinogenic effect.

We therefore are using filtered concentrated co-carcinogens in combination with a few selected and controlled experiments on the plastic implanted and fed rodent along with our present experimentations. X-ray films of animals exposed to 20 methyl cholanthrene and croton oil have been disappointing thus far in our experience but pathological work has not been done as yet.

Conclusion

Although the tissue factor, the type of plastic and the size of the animal may be an element in the development of malignancy in relation to various plastics, in our early experiments we found no definite proof of this tendency in those we have used. We inserted many different types of this material in animals who carry this at present and will continue our observation for some time to come. The substances used have appeared harmless up to the period of one year, but we believe that extending the interval between insertion and sacrifice should be made if we are to accept them as innocuous and practical. We now have Nylon, Dacron, Teflon, Dermal, Dermalon, Acrylic, Bakelite, Polyethylene, Cellophane, Textron, x-ray and camera film, plus various other plastics under observation but will wait a lengthy span of time before we examine the implants histologically. We are feeding more powdered material to rodents which have no other association with these synthetics and again will allow time to pass before we autopsy them. We definitely are pleased with the results thus far but realize our negative findings are not final or conclusive in view of existing literature. Blood studies have indicated the practicability of cadaver bleeding process and possible use in the human if adopted under the right conditions of extraction, storage, and administration.

Note: In reference to the term "plastic teeth," we refer to plastic implants not in a completely functional position in the oral cavity. We did not attempt to "crown" any of these but this may be possible.

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Special Article

A Preventive Program With Medico-Dental Implications

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Dental caries is the most persistent, if not also the most frequent, of all childhood diseases. While the exanthems run their courses, usually without sequelae, the carious tooth never heals. Caries continues to extend and to produce more troublesome, if not serious, symptoms until the carious area or the tooth is removed.

General practitioners, pediatricians, dentists, and other health personnel have educated many people to see their dentists at regular intervals for early diagnosis and care. As a result, about 31% of the population 5 to 24 years of age has visited a dentist within the last six months; 49% within the last year.[1]

Nevertheless, by age 10, children can be classified dentally into two different groups, — one having a markedly higher caries experience, larger number of missing teeth and smaller number of filled teeth in their permanent dentition, than the other.[2]

Fifteen years later, we find dental defects more prevalent than any other physical or mental defect — except vision defects — among men supposedly in the prime of life.[3]

Here in New England, the problem is particularly acute. In the Civil War and in World War I, as well as in World War II, New Englanders had a higher rate of draft exemption for dental defects than men from other sections of the country.[4,5,6]

A number of factors may account for this increased prevalence of caries in New England. It has been suggested that in both the northern and southern hemispheres dental disease, (chiefly caries), increases with latitude and with proximity to the sea coast.[7]

The urgency of the problem, however, lies not so much in its magnitude among the general population as in its implications for special groups well known to physicians. Patients with inadequately cared for teeth and gums are of particular concern to the many physicians who care for patients with cardiovascular disease.

Approximately 2 million people in this country have had or will develop rheumatic fever sometime during their lives. Those who have had it are particularly prone to recurrences. Should such persons fail to maintain good oral hygiene their mouths can be a constant source of potential reinfection. Such individuals are especially vulnerable to bacterial endocarditis. Transient bacteremia is apt to occur following any manipulation of the gums, or oral surgery. Extraction of teeth from badly infected gums of any individual is likely to result in more intense bacteremia than when infection is minimal or absent.[8]

The increasingly widespread use of long-term anticoagulant therapy also presents new, major potential medico-dental hazards. The sudden withdrawal of the drug, on the one hand may cause thrombosis or embolism.[9,10] If, on the other hand, the anticoagulants are continued, profound bleeding may occur during oral surgery.[10,11,12]

The possibility of accidental intravascular injection of local anesthetics presents another real danger to patients with cardiovascular disease. Intra-arterial injections provoke distant anesthesia and blanching, while intravenous injection may cause central nervous system stimulation or depression and produce hypertensive crises or dangerous degrees of myocardial ischemia.[13]

PREVENTION

Obviously, for these and for other groups of the chronically ill, the prevention of dental caries has special significance. Physicians and dentists are accustomed to seeing how the loss of teeth complicates life for the aged and the disabled. With increasing frequency, as our older population continues to grow, they will be confronted with crises in the management of the chronically ill which could be prevented by modern methods of caries control.

The caries-fluorine hypothesis has been so well developed in standard reference works[14,15,16,17] that it needs no elaboration here. Virtually the entire scientific community is agreed that:

"Fluoridation of public water supplies should be regarded as a prophylactic measure for reducing tooth decay at the community level and is applicable where the water supply contains less than the equivalent of 1 ppm of fluorine."[18]

The feasibility of duplicating, by modern engineering methods, the caries-inhibiting effects observed in natural fluoride areas has been demonstrated repeatedly[19,20,21,22] and it is generally accepted that the caries-inhibiting effects observed in natural fluoride areas can be duplicated in any community served by a common water supply, by modern engineering methods.

Although it would be both wasteful and impractical for us to attempt to duplicate these carefully controlled scientific studies in Maine, we have maintained close surveillance over the first fluoridation program initiated in the State, to see whether or not the results obtained here are in general agreement with the results reported from the more elaborate pilot projects.

While the population sample available to us in this study would be too small to test the general hypothesis used in the Grand Rapids, Newburgh, and Brantford studies, it is sufficiently large to test, in the manner hereinafter described, the hypothesis that the caries-inhibiting effects observed in Norway are in general agreement with the effects observed in the major study areas.

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Study History

Norway, Maine is a town of about 3,700 population. In 1945, its public water supply contained a "trace" of fluorides.[23] In October 1952, the town began adding enough sodium silicofluoride to its water supply to maintain a fluoride concentration of 1 part per million.

In the same month, baseline inspections were made of the teeth of all children then enrolled in the elementary and junior high grades of the in-town schools, and in two out-lying schools which transferred all their students to the in-town schools after the first (Lake School) and the fifth (Swift's Corner School) grades.

All of the inspections reported here were made by one registered dental hygienist who has had extensive experience in this type of work. All inspections were made with mouth mirrors and No. 5 explorers, in good, natural light. Age was reported to the nearest birthday, as determined from school registration cards.

In all post-fluoridation inspections, questionnaires were sent home to the parents, inquiring about each child's water-use history since October 1952, and missing or doubtful returns were followed up by personal interview. In this and all previous reports, consideration is limited to children who have used the Norway water supply continuously since birth (or October, 1952 in the case of older children) both at home and at school. Children who have been out of the community for periods of 3 months or less in any one year are counted as continuous users.

Earlier reports led to the conclusions that: "The beneficial effects attributable to the use of fluoridated water begin to become apparent thirty months, or less, after fluoridation is started in a community."[24] "Children six to fourteen years old who used the fluoridated water supply continuously after fluoridation started in Norway, Maine, received significant benefits from the first five years' fluoridation, even though some of them had many of their permanent teeth erupted before fluoridation began."[25]

The parameters of "significant benefit" employed were statistically significant decreases in the average numbers of decayed, missing and filled permanent teeth, and statistically significant increases in the percentage of children entirely free of decay in permanent teeth.

Tenth Year Observations

The third series of inspections was made in October 1962 on the tenth anniversary of the Norway program. The basic demographic data for both the pre- and post-fluoridation inspections are presented in Table I. There are no public or private water supplies in the Norway area known to have contained more than a trace of fluoride in 1952, and no systematic differences in decay rates had been observed in our previous contacts with the Norway schools. Hence, we assumed that all children attending schools in 1952 which were part of or would normally transfer their students to the in-town schools, had the same caries experience regardless of the water supply they used. This assumption enabled us to start from a fairly sizeable baseline sample, and is partially responsible for the observed changes being statistically significant despite the smaller samples observed in the post-fluoridation inspections.

TABLE I

NUMBER OF CHILDREN AND PERMANENT TEETH INSPECTED NORWAY, MAINE, 1952 AND 1962

Age	Children Inspected		Permanent Teeth Erupted	
	1952	1962	1952	1962
6	37	11	176	36
7	43	19	307	134
8	50	14	528	147
9	55	6	769	77
10	52	21	774	338
11	56	22	1092	451
12	52	20	1218	476
13	36	16	931	414
14	38	11	1049	300
All Ages	419	140	6844	2373

The water histories taken during the post-fluoridation inspections disclosed that about 30% of the children used the Norway water supply continuously during the fluoridation period, both at home and at school; about 23% used the supply continuously but only at school; about 28% had been out of the community for more than 3 months at a time during the fluoridation period; and about 19% had no or uncertain water histories. The last three categories were excluded from the post-fluoridation tabulations, thereby reducing the post-fluoridation sample sizes.

Since dental caries is never self-healing, the evidence of a caries attack remains indelibly imprinted on the affected tooth. At any time after the attack, the tooth will be found still decayed, filled, or missing from the mouth. In the 1930s, public health dentists began expressing caries experience by counting the numbers of decayed, missing and filled permanent teeth in the mouth.[26]

Obviously, caries is not the only cause of tooth loss. However, few teeth are lost from periodontal disease before the age of thirty and, in questionable circumstances, public health examiners make serious efforts to determine that a) a permanent tooth did erupt in the now vacant space, and b) it was not extracted for orthodontic reasons alone. This expression of caries experience understates actual experience by the amount of recurrent caries. However, there are practical problems inherent in attempting to determine, for example, whether caries on two tooth surfaces, or caries adjacent to a filling, occurred as a result of one or more caries attacks. Attempts to make such decisions would doubtless cause errors of both over- and under-statement. If we assume that the incidence of recurrent caries is directly proportional to the incidence of primary caries, no serious error is introduced by ignoring this limitation on accuracy of expression.

Table II presents the caries experience actually observed in Norway, and expresses it in terms of average numbers of DMF teeth per child, and per 100 erupted teeth. As one would expect in an accumulating disease, the average amount of caries experienced increases with time. In a survey of an infinitely large population, or in a composite of an infinite number of samples of any size, the annual increment would tend to become uniform, — though not necessarily expressable as a simple arithmetic relationship. There is some evidence that

TABLE II

ACTUAL AND AVERAGE NUMBERS OF DMF TEETH OBSERVED NORWAY, MAINE, 1952 AND 1962

Age	Number of decayed, missing & filled permanent teeth observed		Average number decayed, missing & filled permanent teeth			
			Per child		Per 100 permanent teeth	
	1952	1962	1952	1962	1952	1962
6	36	1	1.0	0.1	20.5	2.8
7	88	6	2.1	0.3	28.7	4.5
8	142	7	2.8	0.5	26.9	4.8
9	238	8	4.3	1.3	31.0	10.4
10	249	47	4.8	2.2	32.2	14.0
11	336	63	6.0	2.9	30.8	14.0
12	399	83	7.6	4.2	32.8	17.4
13	317	78	8.8	4.9	34.0	19.2
14	434	54	11.4	4.9	41.4	18.2
All Ages	2239	347	5.4	2.4	32.7	14.7

TABLE III

CHILDREN WITH NO DECAY IN PERMANENT TEETH NORWAY, MAINE, 1952 AND 1962

Age	Number		Proportion	
	1952	1962	1952	1962
6	22	10	59%	91%
7	10	17	23%	89%
8	6	9	12%	64%
9	1	2	2%	33%
10	0	6	0%	28%
11	2	10	4%	45%
12	0	2	0%	10%
13	0	0	0%	0%
14	0	1	0%	1%
All Ages	41	57	10%	41%

TABLE IV

PROPORTIONATE CHANGES IN PERMANENT TOOTH DECAY RATES NORWAY, MAINE, 1952 AND 1962

Age	Average number decayed, missing & filled permanent teeth		Proportion of children entirely free of decay in permanent teeth
	Per child	Per 100 Permanent teeth	
6	-90%	-86%	+54%
7	-86%	-84%	+287%
8	-82%	-82%	+433%
9	-70%	-66%	+1,550%
10	-54%	-56%	Infinite
11	-52%	-54%	+1,025%
12	-45%	-47%	Infinite
13	-44%	-44%	Infinite
14	-57%	-56%	Infinite
All Ages	-56%	-55%	+310%

caries occurs in "spurts," primarily around ages 6 to 8 and in the mid-teens, and there is good evidence that it tapers off as caries-susceptible areas are filled or lost. Obviously, the DMF rate can never diminish with age, as entries in the "per 100 permanent teeth" columns might suggest. These observational phenomena are the products of small sample size.

Table III presents the numbers and proportions of children in whom "no evidence of decay was observed in permanent teeth." Here, we see the opposite of the trend referred to above. As caries continues to take its toll, the caries-free population dwindles.

The magnitude and direction of the changes observed in the three parameters of caries experience in Norway, over the decade, are presented in Table IV. Both in terms of average DMF per child and average DMF per 100 erupted teeth, caries experience was 55% lower in 6- to 14-year-old children in 1962 than in 1952. The proportion of children entirely free of decay in permanent teeth was more than 3 times as large in 1962 as in 1952.

When two percentages differ by 3 or more "standard errors" it is practically certain that the difference did not result from chance. All age groups showed a decrease of more than 3 standard errors in the average number of DMF teeth per 100 permanent teeth erupted. The minimum decrease in "standard errors" is 4.3 for the 6-year-olds, and the maximum is 8.6 for the 14-year-olds. The group as a whole showed a decrease of 20.1 "standard errors." The probability of this being due to chance alone is infinitesimal.

These results are in substantial agreement with the changes observed in the major study areas. In Grand Rapids, for example, "the caries rate for the permanent teeth was reduced on the average by about 60%," for 5- to 16-year-olds, at the end of ten years.[27]

In Newburgh, the average reductions were 52.9% per child and 52.2% per 100 erupted permanent teeth for 6- to 14-year-olds at the end of ten years.[28]

Summary

1. Dental caries probably is the most prevalent of all the chronic diseases of man.

2. For at least a century, it has struck New England harder than other sections of the country.

3. The occurrence of caries introduces special, additional hazards for persons with cardiovascular disease — the leading cause of death in the United States.

4. Caries-prevention, therefore, is urgently indicated.

5. The caries-inhibiting effects observed in natural fluoride areas can be duplicated in any community served by a common water supply, by modern engineering methods.

6. After 10 years' use in Norway, Maine, fluoridation has produced results in general agreement with those reported from the major fluoridation studies — a 55% reduction in the average number of decayed, missing and filled permanent teeth, and a threefold increase in the proportion of children entirely free of decay in permanent teeth.

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Department of Health and Welfare

The Kerr-Mills Act In Maine

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Last June at the annual meeting of the American Medical Association the House of Delegates received 17 resolutions expressing full support of the Kerr-Mills bill and firm opposition to the King-Anderson type of legislation.

Just what is the Kerr-Mills program and why did the House of Delegates decide to support it?

This bill is designed to help the older population of this country in time of sickness and is not in any way socialization of medicine. The Kerr-Mills plan is aimed at those who actually need assistance — persons with small incomes and limited assets. Unlike the King-Anderson bill it does not encompass *everyone* over 65, giving aid whether or not it is needed. At the same time the Kerr-Mills system takes into account the important aspect of individual pride and dignity and it does not "pauperize" a person who may be able to sustain himself under ordinary circumstances, but is soon overcome in time of illness. The Kerr-Mills plan combines state and federal money in a wide degree of state freedom in enacting and carrying out this legislation. Therefore there is a minimum of federal control. Complete freedom in the choice of the type of medical care is allowed and there is no danger in this plan that the choice of a physician is in any way impaired. Financing of the plan comes through state and federal appropriations rather than from social security taxes as would be true of the King-Anderson plan.

There are now 28 states and territories having enacted Kerr-Mills legislation and offering an active program of assistance to their senior citizens who qualify. Maine is one of these, having passed such legislation at the 100th Legislature. The program went into effect in October of 1961 and thus has been in operation for parts of two fiscal years. The program at the present time involves mainly hospitals and their services. It is administered by the State Department of Health and Welfare through its Division of Family Services and is known as the Medical Assistance to the Aged program.

And what are these provisions?

A person receiving Kerr-Mills assistance may be hospitalized in any licensed hospital in the state for up to 45 days per calendar year without receiving a bill from the hospital. In extreme illnesses and with the advice or recommendation of the physician, extensions are sometimes granted by the state office of the Department of Health and Welfare. During the hospital stay all ancillary services are included. Of course the patient must accept the type of accommodation suitable to his illness and as provided under this program. The hospitals receive payment from the state within limitations established for the program, but considerably under the cost of these services to the hospitals. Therefore the hospitals themselves become contributors to the program. In most instances the physicians also are contributors, since a majority of these patients hospitalized in the general service areas receive no bills from physicians. There are, of course exceptions when long-term home care has also been a part of the physician's service and his staff service at the hospital continues throughout the patient's care. At present, the program provides only institutional medical care and some specialized services although there is indication that the program will gradually be broadened. (There is no provision at present for either nursing home care or professional nursing in the home.)

And what about eligibility?

The regulations are relatively simple and dignified. A person must be over 65, have not more than $1500 annual income and not more than the same amount in assets, exclusive of his home which he may own without involvement in his medical assistance. For a couple the limitations are $2100 for both income and for assets. Hospitalization must be on the recommendation of a physician. No attempt is made under this program to hold any relative responsible for the cost of hospital care. The definition of allowable assets may include any one of the following which is not in excess of $1500 for an individual or $2100 for a couple: business property, bank account, stocks and

*Consultant, Medical Care Program

bonds, cash surrender value of life insurance, or livestock, car or machinery not essential to everyday living.

Maine's system is rather unique in that state officials have not instituted a costly inspection system to challenge the veracity of statements. A spot check is planned as an alternative at periodic intervals. Says Stephen P. Simonds, director of the Bureau of Social Welfare:

"The State of Maine is implementing the Kerr-Mills program of medical assistance to the aged with a minimum of 'red tape,' no costly inspection system to challenge the veracity of applicants, and a great deal of emphasis on self-respect and dignity. We have one of the most liberal programs of any of the states now using the Kerr-Mills legislation to supplement the mounting medical and hospital needs of the over-65 population."

A report issued by the state summarizing the experience of the first six months' operation revealed that 1313 individuals were hospitalized under the plan at a cost of $349,817, of which $116,839 represented state funds. This was approximately $266 per individual. In addition to those hospitalized 504 others were certified as eligible for medical assistance when needed. Of those applying, 266 were turned down as ineligible, usually because of income and assets beyond the limit under which this assistance can be provided.

It is further pointed out by state officials that the program is quite adjustable within the framework of the law, and the individual states have considerable freedom in administering the bill. This absence of federal "strings" is a main factor in the support of physicians' groups for the program.

Exploration, planning, interpretation and implementation are all ingredients of this first year of the Kerr-Mills bill in Maine. Every hospital in the state has had access to the program although not all have yet participated. A helpful boost in acquainting hospital officials with the administrative aspects of the program was a series of meetings arranged by the Maine Hospital Association in Portland, Bangor and Presque Isle. The Association officers planned the complete program held in forum style in connection with the Department of Health and Welfare and accomplished a lot in getting the program across to those most directly concerned in seeing that it reaches Maine citizens.

Last spring a meeting was called by Dr. Dean Fisher, Commissioner of the Department of Health and Welfare, and Dr. Daniel F. Hanley, executive director of the Maine Medical Association, for the purpose of airing the program with the physicians of Maine. This was a step toward bringing the program into focus in another area directly affecting the success of the plan.

Most recently the Department of Health and Welfare has launched a public information program which is filling the need for more public understanding of the provisions. Until now, few senior citizens realized that these benefits were available. Consequently, the Department is currently "snowed under" with more applications in a few weeks than had been received during the first year. It is anticipated that more than 1,000 will be actually certified within the month, since by and large the applicants seem to have understood the announced regulations and the majority appear to be eligible.

What do we as physicians need to know in order to help the program along?

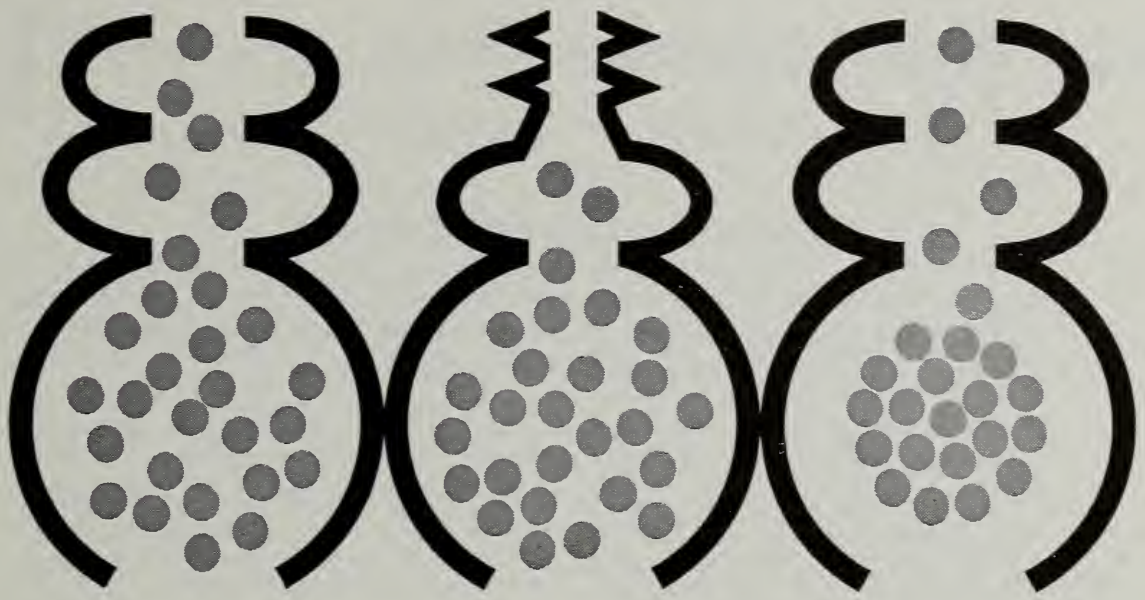
First of all, the basic qualification for eligibility should be well understood so that the program may be suggested to patients who may hesitate to accept needed hospital treatment because of the worry about cost. Information pamphlets are available at the Department of Health and Welfare which might be useful to have on hand in offices. Secondly, a reminder that applications for this form of assistance are available through the State Department of Health and Welfare or any of its twelve branch offices; through town offices, or at the admitting offices of hospitals. Such applications filled out and certified in advance of the need for hospitalization can be a source of comfort to the patient, and an administrative aid to hospital officials. Too often patients have arrived at the hospital too ill to be presented with such application; and in general the senior citizens have not been aware of the provision or advised to apply before illness strikes. Applications are certified at the State headquarters and information will be received promptly letting each applicant know whether or not he is eligible. Applications should be reviewed annually to remain in effect.

And what about hospital insurance, or old age assistance?

Those who have Blue Cross or some other form of hospital insurance may still benefit under the Kerr-Mills plan. The period covered by such insurance is deducted from the total bill, and the Kerr-Mills provision can pick up the extra days of hospitalization beyond the insurance allowance.

As for Old Age Assistance, those receiving this aid, or needing it because of inadequate living arrangements, are under a completely separate category than the regular Kerr-Mills recipients. The provisions for hospital care are the same under Old Age Assistance, but the regulations relative to property ownership and responsibility of relatives differ. However, if it is foreseen that an elderly person is going to need extensive care, possibly in a nursing home, and no funds or assets are available, it may be advisable for such individual to apply for Old Age Assistance under which nursing home care can be provided. However, under this plan, relatives can be held responsible by the state.

To summarize: the Kerr-Mills program in Maine is filling a need not previously met; it protects a patient's dignity; it helps the low income group; it permits freedom of choice of physician and hospital; it contains a minimum of 'red tape' and is completely administered by the State of Maine. It deserves our support.



lowers motility | relieves cramping | stops diarrhea

LOMOTIL® Antidiarrheal tablets and liquid

(brand of diphenoxylate hydrochloride with atropine sulfate)

Traditionally the most effective means of slowing excess intestinal motility in diarrhea and so of relieving the disorder have been the opium derivatives. Now Lomotil makes available an antidiarrheal agent[1] of greater therapeutic efficiency than morphine.

By controlling hypermotility, the basic mechanical dysfunction of diarrhea, Lomotil reduces the frequency and fluidity of stools, diminishes cramping and controls diarrhea in many patients in whom other drugs have proved inadequate.

In a recent clinical report Cayer and Sohmer[2] state: "The alleviation of symptoms [with Lomotil] was usually prompt, occurring within 24 to 72 hours even in the long-standing chronic cases. . . . A surprisingly satisfactory response was obtained in 75 per cent of the patients with regional enteritis and in 63 per cent of those with ulcerative colitis, all of whom had failed to respond to other measures."

The high therapeutic efficiency of Lomotil, its safety, convenience and economy may be used to advantage in acute or chronic diarrhea.

Dosage: For *adults* the recommended initial dosage is two tablets (2.5 mg. each) three or four times daily. Maintenance dosage may be as low as two tablets daily.

Lomotil is supplied as unscored, uncoated white tablets of 2.5 mg. and as liquid containing 2.5 mg. in each 5 cc. A subtherapeutic amount of atropine sulfate (0.025 mg.) is added to each tablet and each 5 cc. of the liquid to discourage deliberate overdosage. Recommended dosage schedules should not be exceeded.

Note: Lomotil is an exempt preparation under Federal narcotic statutes.

Detailed information and directions for use in children and adults are available in Physicians' Product Brochure No. 81. G. D. Searle & Co., P. O. Box 5110, Chicago 80, Illinois.

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1. Janssen, P. A. J., and Jageneau, A. H.: A New Series of Potent Analgesics: Dextro 2:2-Diphenyl-3-Methyl-4-Morpholino-Butyrylpyrrolidine and Related Amides. I. Chemical Structure and Pharmacological Activity, J. Pharm. Pharmacol. 9:381-400 (June) 1957.
2. Cayer, D., and Sohmer, M. F.: Long-Term Clinical Studies with a New Constipating Drug, Diphenoxylate Hydrochloride, N. Carolina Med. J. 22:600-604 (Dec.) 1961.

G. D. SEARLE & CO. *Research in the Service of Medicine*

Maine Heart Association Notes

A Guide To Anticoagulant Therapy

Prepared for the Committee on Professional Education of the American Heart Association by Benjamin Alexander M.D. and Stanford Wessler M.D. is now available from the Maine Heart Association.

The booklet provides the physician with guiding principles and practical recommendations for the proper use of anticoagulant drugs. The physician who undertakes anticoagulant therapy interferes with one of the most important hemostatic functions of the body. In so doing, he subjects the patient to the calculated hazard of possible hemorrhage balanced against the risks of the thrombosis or embolism which he seeks to prevent or treat.

The agents currently employed are discussed — heparin and coumarin-type compounds. These two categories of anticoagulants act at different sites of the coagulation mechanism; they are administered differently, metabolized differently, reversed by different antidotes, and their effects are measured by different tests.

Facts about the hemostatic mechanism concerning which the physician should be informed are presented: the physiology and pharmacology of the anticoagulants, especially as they may explain the wide variation in individual response; certain aspects of methodology; and the various practical problems involved in therapeutic management. Emphasis has been placed on the importance of individualization of treatment, careful clinical observation, and frequent reliable laboratory tests as guides to proper therapy.

The material in this guide is for the physician who has decided to use anticoagulants and is designed to help him in making clinical judgments. It does not consider the indications for therapy or the merits of different agents in the prophylaxis or treatment of specific diseases. Also, fibrinolytic agents alone, or in conjunction with anticoagulant therapy, have not been included because there has not been enough clinical experience to permit recommendations.

Also available at the Maine Heart Association, 116 State Street, Augusta, Maine, is a new leaflet entitled "Anticoagulants Your Physician and You." This leaflet explains to the layman the various aspects of anticoagulant therapy, its benefits and precautions that should be taken by the patient receiving these drugs. A companion piece to the leaflet is an emergency anticoagulant identification card which can be carried in either purse or wallet of the patient being treated with these drugs. It provides space for the identification of the specific drug being used and the address and phone number of the physician who prescribed the drug. These cards are also available through the Maine Heart Association.

Interim Reports

Report Of The Delegate To The AMA House Of Delegates Clinical Session

November 25-28, 1962, Los Angeles, California

In his opening address, Dr. George M. Fister of Ogden, Utah, President of AMA reaffirmed AMA's stand against Social Security health care of the aged.

The House, by a vote of 130 to 48, adopted changes in the Constitution and Bylaws which would have implemented the June, 1962 recommendations of the Ad Hoc Committee on the Board of Trustees, including expansion of the Board from 11 to 15 members. However, the Judicial Council later informed the House that the affirmative votes necessary to amend the Constitution should have totalled at least 144, or two-thirds of the 216 voting delegates registered at the Wednesday session. The House then adopted a motion to vote on the proposed Constitutional amendments, in accord with the changes made in the Bylaws, at the opening session of the June, 1963 meeting.

A special report on the compensation of interns and residents, which was published in the October 27 issue of JAMA, was presented to the House by the Council on Medical Education and Hospitals and the Council on Medical Service. The report was submitted as information only, with a request for further study, comments and suggestions. The House urged that all delegates, hospital staffs and medical societies discuss the report and forward all suggestions to the two Councils in time to influence the form of the report to be presented for action at the June, 1963 meeting.

The House modified one recommendation which your delegate spoke against which was as follows:

In order to maintain high standards of education and better assure the patient's welfare, at least 25% of the total house staff of a hospital should be graduates of accredited United States or Canadian medical schools. When the United States and Canadian graduates represent a lesser portion of the house staff for two successive years, this will warrant that serious consideration be given to disapproving the internship.

I felt along with several other delegates that on some occasions it might be necessary for a hospital to accept more than 75% of foreign graduates to its house staff and they should not cause them to be disapproved for residency and internship, but the Council recommendation was carried.

The House reaffirmed its approval of the Kerr-Mills Bill with the following amendments:

1. Remove the requirement that both Old Age Assistance and Medical Assistance for the Aged programs be administered by the same agency.
2. Provide flexibility in the administration of the income limitations proposed under state law so that a person who experiences a major illness may qualify for benefits if the expense of that illness, in effect, reduces his income below the maximum provided.
3. Include a provision in the law requiring state administering agencies to seek expert advice from physicians or medical societies through medical advisory committees; and
4. Provide for "free choice" of hospital and doctor under state programs.

Opposition to the King-Anderson type of legislation was reaffirmed.

The House also endorsed four amendments in the Internal Revenue Code. These amendments would liberalize tax deductions for medical expenses of dependents over age 65; remove the 1 per cent drug limitation and include drugs as medical expenses; permit taxpayers over 65 to receive full tax benefits for medical expenses by use of the carry-forward and carry-back principle, and provide a tax credit for medical expenses paid by the over age 65 taxpayer, proportionate to the relation between his medical expense and taxable income.

The Judicial Council submitted a report containing new opinions on the medical ethics involved in physician ownership of drug stores, drug repackaging houses and drug companies, dispensing of glasses by ophthalmologists, and advertising practices of medical laboratories. The House decided that the questions of physician ownership of drug stores, drug repackaging houses and drug companies, and the dispensing of glasses by ophthalmologists, should not be acted upon at this time. Those opinions were returned to the Judicial Council for further study and report. The House approved the portion of the report relating to advertising practices of medical laboratories and agreed that the propriety of such practices should be determined at the local level in compliance with the new opinion. The House also approved the rules of procedure adopted by the Judicial Council for disciplinary action in cases where the Association now has original jurisdiction as conferred by the June 1962, change in the Bylaws.

The House instructed the Board of Trustees to use every influence in their command to have the Hill-Burton Law amended in such a manner as to eliminate all categorical grants, eliminate the term "diagnostic and treatment centers" from any listings in the act and prevent federal funds being awarded under existing law as a grant to closed panel medical corporations to build diagnostic and treatment centers.

It also authorized the Board of Trustees to investigate the feasibility of establishing a physicians' pension plan and to present a plan for the implementation of such a program to the House in June.

The delegates learned from a report by the AMA Education and Research Foundation that one out of every ten medical students in the U. S. is now benefiting from the new student loan program. Since its inception nine months ago, the program has granted loans totaling more than nine million dollars to 3,042 medical students and 1,787 interns and residents, with applications being received at a rate of 150 per week. It also was announced that Merck Sharp & Dohme Company is making a second matching grant of $100,000 in support of the loan fund. The AMA-ERF also received contributions totaling $440,583 from physicians in five states for financial aid to medical schools.

The Sixteenth Clinical Meeting was attended by 5,209 physicians and according to the printed clinical program presented an interesting and challenging session on advances in medicine.

I would like to make myself available to discuss with individual Maine Medical Association members or county groups any subject coming within my jurisdiction as your AMA delegate, and also receive from you any advice or instructions to take with me to AMA meetings.

Asa C. Adams, M.D.
Delegate to the AMA

Report From The Public Relations Committee

Television Documentaries

In cooperation with the Associated Hospital Service of Maine and the Department of Health and Welfare, the Maine Medical Association is co-sponsoring a series of six one-hour television documentaries commencing January 23, 1963. They will be shown at 7:30 p.m. once a month on a Wednesday night over WGAN-TV, Portland; WABI-TV, Bangor; and WAGM-TV, Presque Isle.

The shows were produced by Screen Gems, Inc. in cooperation with the San Francisco Medical Society and are unique in the respect that no actors or actresses have been used.

When the programs have been shown elsewhere, public response has been excellent. For example, when the show entitled "Corneal Transplant" was shown in Rhode Island, more than 50 people wanted to donate their eyes as a result of the show.

In formulating the "commercials" primary consideration is being given to an approach which will be beneficial to all three co-sponsoring agencies. In doing this we hope to interview some local physicians and provide information about health careers.

The cost of the six shows combined will be approximately $8,000. Blue Cross and Blue Shield will pay 1/2 the total portion while the Maine Medical Association and the Department of Health and Welfare will pay 1/4 each.

Although some of the operations which will be shown are not generally performed in Maine hospitals, it was the consensus that because the shows all fall under the heading of "Medicine of the Sixties" some of the lesser known as well as commonplace procedures should be depicted.

Prior to each program Blue Cross and Blue Shield will disseminate information pertaining to the forthcoming show. We hope you will prominently display this information and urge your patients and acquaintances to view the programs.

We anticipate that those who watch the programs will renew their appreciation of our Maine hospitals and Maine physicians. It will be greatly appreciated if you will let us know both your impression of the programs and any comments passed on to you from others.

DONALD F. MARSHALL, M.D.
Committee Chairman

County Society News

HANCOCK

December 12, 1962

A meeting of the Hancock County Medical Society was held at the Hancock House in Ellsworth, Maine on December 12, 1962.

The following slate of officers were elected for 1963:

President, Russell M. Lane, M.D., Blue Hill
Vice-President, Elizabeth E. Williamson, M.D., Blue Hill
Secretary-Treasurer, Russell G. Williamson, M.D., Blue Hill
Delegates to the Maine Medical Association House of Delegates: Elizabeth E. Williamson, M.D., Blue Hill and Llewellyn W. Cooper, M.D., Bar Harbor. Alternates: Arthur M. Joost, Jr., M.D., Bucksport and Philip L. Gray, M.D., Blue Hill
Censors: Arthur J. Joost, Jr., M.D., Bucksport (3 yrs.), Robert F. Russell, M.D., Penobscot (2 yrs.) and Bradley E. Brownlow, M.D., Blue Hill (1 yr.)

The Report of Committee to Review the Size, Make-Up and Mode of Operation of the Council of the Maine Medical Association, Robinson L. Bidwell, M.D., Portland, Chairman, was presented by Elizabeth E. Williamson, M.D. By an 8 to 2 vote the delegates were instructed to vote against this proposition.

RUSSELL G. WILLIAMSON, M.D.
Secretary

LINCOLN-SAGADAHOC

December 18, 1962

Seventeen members and one guest were present at the Lincoln-Sagadahoc County Medical Society meeting which was held at The Ledges in Wiscasset, Maine on December 18, 1962.

Fuller G. Sherman, M.D. of Boothbay Harbor was elected to membership in the society.

Drs. Harry M. Wilson, Francis A. Winchenbach and John F. Andrews were appointed as a nominating committee by the President, Hamdi Akar, M.D., for the January meeting elections.

GEORGE W. BOSTWICK, M.D.
Secretary

CUMBERLAND

December 20, 1962

A combined meeting of the Cumberland County Medical Society and the Cumberland County Bar Association was held at the Eastland Motor Hotel in Portland, Maine on December 20, 1962.

After a social hour and dinner, the meeting was called to order by the President, Robinson L. Bidwell, M.D. Drs. Boris A. Vanadzin, Niles L. Perkins, Jr. and Hirsh Sulkowitch, all of Portland, were elected to membership in the society. Drs. Lewis M. Feiges and William L. Wilkie were elected to service affiliate membership.

Maurice Van Lonkhuyzen, M.D. reported on the activities of the Ad Hoc Committee for recommendations to the Registrar of Motor Vehicles in respect to patients who are unsafe drivers for medical reasons. The Committee made the following motion which was passed: "In the interest of preventing death, injury, and disease, the Cumberland County Medical Society supports in principle the mandatory reporting of patients who for medical reasons are unsafe drivers."

The following officers were elected for 1963:

President, Philip P. Thompson, Jr., M.D., Portland

Vice-President, Eugene P. McManamy, M.D., Portland
Public Relations & Grievance Committee, Edward G. Asherman, M.D., Portland, Chairman; Elton R. Blaisdell, M.D. and Eugene C. McCann, M.D., both of Portland
Delegates to the Maine Medical Association House of Delegates for two years: Merle S. Bacastow, M.D., Louis G. Bove, M.D., Philip S. Fogg, Jr., M.D., Howard P. Sawyer, Jr., M.D., Philip P. Thompson, Jr., M.D. and Maurice Van Lonkhuyzen, M.D., all of Portland. Alternates: Clifford W. Gates, M.D., Gorham; Clement A. Hiebert, M.D., Stephen E. Monaghan, M.D., Hugh P. Robinson, M.D., Stanley B. Sylvester, M.D. and William J. Tetreau, M.D., all of Portland

The remainder of the evening was devoted to a Panel Discussion of various aspects of the State Commitment Laws for the mentally ill, as well as the lack of provision for care of the mentally retarded. The two panelists were Peter W. Bowman, M.D., Superintendent of the Pineland Hospital and Training Center and Mr. Perry, Assistant Attorney General in Augusta.

ALBERT ARANSON, M.D.
Secretary

Necrology

FRANK P. METHOT, M.D.

1909-1962

Frank P. Methot, M.D. died July 5, 1962 at St. Mary's General Hospital in Lewiston, Maine. He was born in Manchester, New Hampshire on June 20, 1909. He received his primary education in the school system of his home city, his secondary education at St. Charles Seminary in Sherbrooke, Quebec and was graduated with a Bachelor of Arts degree from St. Anselme's College in Manchester, New Hampshire. His Doctorate in Medicine was obtained from Montreal University in 1943 and this was followed by a rotating internship in the University Hospital. In 1945, he located in Lewiston for the practice of medicine.

Dr. Methot was a member of the Androscoggin County Medical Association and the Maine Medical Association for seventeen years. He served St. Mary's General Hospital faithfully and well. He was a devoted head of a charming family group, an honorable and popular citizen of this community and a successful practitioner of the healing art.

Announcements

Department of Health and Welfare Division of Maternal and Child Health Including Services for Crippled Children (By Appointment Only)

Orthopedic Clinics

Bangor — Eastern Maine General Hospital
9:00 a.m. and 1:00 p.m.: Jan. 24, Mar. 21
Houlton — Aroostook General Hospital
9:00 a.m.: Mar. 12
Lewiston — Central Maine General Hospital
9:00 a.m.: Feb. 15, Mar. 15
Portland — Maine Medical Center
9:00 a.m.: Feb. 11, Mar. 11
Presque Isle — Arthur R. Gould Memorial Hospital
9:00 a.m. and 12:30 p.m.: Mar. 13
Rockland — Knox County Hospital
1:30 p.m.: Feb. 21
Rumford — Community Hospital
1:30 p.m.: Mar. 20
Waterville — Thayer Hospital
1:30 p.m.: Feb. 28

Cardiac Clinics

Bangor — Eastern Maine General Hospital
9:00 a.m.: Jan. 25, Feb. 8-15, Mar. 8-22
Portland — Maine Medical Center
9:00 a.m.: Every Friday (holidays excepted)

Cleft Palate Evaluation Clinics

Portland — Maine Medical Center
10:00 a.m.: Feb. 12

Pediatric Clinics

Bangor — Eastern Maine General Hospital
1:30 p.m.: Jan. 25, Feb. 15, Mar. 22
Fort Kent — Peoples Benevolent Hospital
10:00 a.m.: Mar. 27
Presque Isle — Arthur R. Gould Memorial Hospital
1:30 p.m.: Jan. 23
Waterville — Thayer Hospital
1:30 p.m.: Feb. 5, Mar. 5

Clinics For Mentally Retarded Pre-School Children

Waterville — Thayer Hospital
9:00 a.m.: Jan. 30, Feb. 6-20, Mar. 6-20.

Adolescent Clinics

Portland — Maine Medical Center
1:00 p.m.: Jan. 23, Feb. 27, Mar. 27

Cystic Fibrosis Clinics

(In conjunction with the Maine Medical Center, Portland)
Portland — Maine Medical Center
9:00 a.m.: Feb. 19, Mar. 19-20

Book Reviews

Irritation and Counterirritation — By Adolphe D. Jones, M.D. Published by Vantage Press, Inc., New York 1, N.Y., 1962. Pp. 368. Price $7.50

This 368 page book is an attempt to establish a unified theory capable of explaining the full range of functions in the living organism. This theory is given the name of Auto-amputative Property (AAP) of the CNS.

Three distinct themes are noticed.

1. The theory is discovered by the use of "strict logico-deductive principles" after three assumptions are made and promoted to the status of axioms, AAP is deduced.
2. "Biological phenomena are scrutinized for possible verification." Some of these biological phenomena are of doubtful value. I shall give two instances:
   a. Chinese Acupuncture is one of such biological phenomena and AAP is said to be capable to explain this Chinese therapy.
   b. Similar comments are made on lobotomy. Unfortunately, the reported results of lobotomy are open to discussion.
3. Therapeutic applications. Statements such as "the principles of psychotherapy have yielded positive results to the author in the treatment of character disorders" are a challenge to the known fact that it is notoriously difficult to treat successfully character neuroses namely the inadequate personalities and the psychopathic personalities. A paradoxical statement is the following: "Often a depression is brought dramatically to a disappearance following copious lachrymation. Therapeutically, this can be duplicated with diuretics." The author advocates ammonium chloride for this purpose.

I did not feel that this book was the "intellectual exercise" that it promised. There are some interesting and worthwhile concepts but one has to discover them because not only are they incidental but they are mixed with propositions of doubtful value.

ALPHONSE TELFEIAN, M.D.
Portland, Maine

Ciba Foundation Symposium, Pulmonary Structure and Function — Edited by A. V. S. DeReuck, M.S.C., D.I.C., A.R.C.S., and Maeve O'Connor, B.A. Published by Little, Brown and Company, Boston, Massachusetts, 1962. 403 Pages, 21 x 14 cms., 101 illustrations.

Twenty-nine authorities from various countries participated in this symposium whose minutes were recorded and edited. Nineteen papers were read and each followed by a general discussion. It is obvious from the first of these articles, that this seminar was never intended for the practicing physician, and in fact that the chest specialists would find it difficult going indeed. That structure and function are two sides of the same coin is quite obvious, though under certain circumstances, one aspect will appear to overshadow the other. The clinician will be impressed, if not dismayed, by the vast gap between terminology and techniques of the pulmonary anatomist and physiologist and its application to the treatment of diseases of the lungs. If one is both courageous and patient in working his way through these erudite pages, a few "pearls" may be found which add to the therapeutic and diagnostic armamentarium.

The symposium opened with a general review of the anatomy of the lungs by Dr. A. A. Liebow. He pointed out significant changes in the bronchi muscles and aveoli, both in their microscopic and sub-microscopic structures, as well as in the pulmonary and bronchial circulation. Of particular interest to the reader were the properties of the mucus secreted by the mucus cells and glands in the respiratory tract. Particularly the ability of mucus to lose 40 to 70% of its water before there is any great increase in its consistency.

A new theory of the proprioceptive mechanisms of respiration was presented by Dr. E. J. M. Campbell of Britain. Pulmonary perfusion-ventilation relationships received much attention and discussion as is usually the case when two or more pulmonary physiologists meet. But perhaps the most fascinating subject to the reader was the description and discussion of the secretions of the lungs and their function particularly in relation to Dr. R. E. Pattle's work on surface tensions. Considerable work has been done on this problem in the last ten years, and it seems that the alveolar cells form a liquid which coats the alveolar surface with a continuous lining which changes its surface tension in relation to compression and expansion. An appreciable percentage of the elastic recoil of the lung is due to this surface tension mechanism. The alveolar fluid derives this property from a lipoprotein. It is of clinical significance that lungs contaminated by detergent, as well as anoxic or atelectatic lungs lose this function. Under certain conditions such as pulmonary artery occlusion or perfusion of chemically altered blood as in open heart surgery with pulmonary bypass, the lipoprotein may either be inactivated or not formed in adequate amounts.

The symposium closes with a discussion of pulmonary emphysema. It is noted that the clinician makes this diagnosis much more often than the pathologist or anatomist. Two forms of emphysema are differentiated one focal, the other centrilobar. Much discussion involves the techniques of fixation of the lung and section examinations. References are profuse throughout the book and of necessity, quite recent, indicating not only the recency of such studies as well as the astonishing rate at which they are being carried out.

ALBERT ARANSON, M.D.
Portland, Maine

Basic Anxiety — By Walter T. Garre, M.D. Published by Philosophical Library, Inc., New York 16, N. Y., 1962. Pp. 123. Price $5.00.

In this rather small volume describing "A New Psychobiological Concept," Dr. Garre has presented his thinking regarding the nature of this Basic Anxiety and as it relates to the four basic concepts of life and their disturbances. His thesis, that this Basic Anxiety ("This Sensation of Fear"), results from the infant's fear that: "(1) he will actually be destroyed by his mother, (2) that his mother would not protect him from danger to her limits, and (3) that he might be abandoned."

Although an interesting theoretical speculation, Dr. Garre fails to prove his thesis, fails to contribute anything that is original. The writing does make conclusions and correlations that are therapeutically engaging, but vague and speculative as they touch all phases of life.

Dr. Garre's philosophical sensitiveness as a psychotherapist is evident in the writing, but the volume lacks the scientific objectivity that is necessary to make the thesis something more than an exercise.

GUY N. TURCOTTE, M.D.
Portland, Maine

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Medicine In Colonial Maine

With Particular Reference to an Article, "M. Appleton, 1800. Chronicler of Colonial Medicine" by Doctors Pope and Patterson

Frederick T. Hill, M.D.*

The Spring number (1962) of the Harvard Medical Alumni Bulletin carried an interesting article by Alton S. Pope, M.D. and Raymond S. Patterson, Ph.D., entitled "M. Appleton, 1800 — Chronicler of Colonial Medicine." Dr. Pope, who had acquired Dr. Appleton's journal from a relative, became fascinated with what he termed "a unique first-hand record of the beginnings of medical education in this country and a strikingly clear picture of general practice in that period" and, in collaboration with Dr. Patterson, submitted this article to the Bulletin.

Realizing that the Bulletin has a distribution largely confined to graduates of Harvard Medical School and feeling that many of our Maine physicians might be interested in early Medicine in our State, I have taken the liberty, with the permission of the authors, of quoting freely from their article, while endeavoring to give some general background history of Maine in its colonial period.

Dr. Moses Appleton, the subject of the article by Drs. Pope and Patterson, was born in New Ipswich, New Hampshire on March 17, 1773. He graduated from Dartmouth College in 1791. He then taught school in Medford, Massachusetts until he entered Harvard Medical School in 1793 in the fifth class to be enrolled.

The Medical School at that time offered a two-year program of lectures and demonstrations by a faculty of three. Dr. John Warren taught Anatomy, Physiology, Midwifery, and Surgery; Dr. Benjamin Waterhouse, Theory and Practice of Physic; and Dr. Aaron Dexter, Chemistry and Materia Medica. Young Appleton took careful notes of these lectures which, together with the examination questions, are preserved in his journal. Pope and Patterson have quoted many of these in their article in the Bulletin. We will quote only one for illustration: Dr. Warren's Lecture, No. 32, "Surgery and Surgical Operations." It is dated November 10, 1794, and deserves more than passing comment as an indication of the scope and limitations of surgery in that period. While it is unlikely that the 13 operations listed by Dr. Warren exhausted his repertoire, these procedures were apparently considered adequate for the needs of the general practitioner of that day.

"1. Trepanning (Trephining): "The integuments are laid open by a longitudinal incision and the periosteum separated from the cranium by the rugine. The . . . perforator is then bored into the skull so far as to confine the pin of the trephine. The trephine is then used, although the French prefer the trepan with which the operation is performed with more expedition than the trephine, but not with the same safety."

2. Couching
3. For the fistula lachrymalis
4. For the hare lip
5. Paracentesis of the thorax
6. Paracentesis of the Abdomen
7. Lithotomy
8. For the fistula in Ano
9. For the anourism — (aneurism)
10. For the bubonocele or scrotal hernia
11. (Omitted)
12. Extirpation of the testis or castration
13. Amputation of the leg; Amputation of the thigh

At the end of Dr. Warren's lecture on "Midwifery," Dr. Appleton records the admonition, "In all cases, the

*From Thayer Hospital, Waterville, Maine.

greatest attention should be given to neatness and delicacy, as on these points the reputation of a young practitioner very much depends."

At the conclusion of this two-year course Appleton passed the final comprehensive examination and was granted the degree of Bachelor of Medicine. He then studied under the preceptorship of Dr. Governor Brooks of Medford and, after examination by a committee from the Massachusetts Medical Society, received the degree of Doctor of Medicine, in 1796. He then settled in Winslow, in Teconnet Village (now Waterville), where he practiced medicine until his death in 1849. What sort of place was this Teconnet Village? What may have intrigued him to settle there? What about the earlier history of this region?

Almost from the first settlements, Maine had been a scene of continued warfare between the English on one hand, and the French and native Indians on the other, conflicts generally coinciding with wars in Europe. This has been described as 85 years of warfare with occasional truces.

England's claim to this territory was founded upon the discoveries of Sebastian Cabot in 1498. In 1602 Martin Pring explored Penobscot Bay, as well as the Kennebec, Saco, and York rivers. This same year Henry IV of France issued a patent, granting to DeMonts all of the territory between Cape Breton Island and the Hudson River. At the mouth of the Kennebec, DeMonts raised a cross and took possession of the Country in the name of the King of France. Rumors of these movements reached the English Government and efforts were made to counteract them. Weymouth's voyage in 1605 brought him to the coast of Maine where he erected a cross on Monhegan, taking possession of all adjacent land in the name of James I, King of England.

In efforts to colonize these areas large grants of land were made by the English King to favored persons, with certain prerequisites reverting to the Crown. In 1606 the Plymouth Company was chartered by James I. In 1607 the Popham colony was established at the mouth of the Kennebec River, antedating the Pilgrim Colony at Plymouth by 13 years. The Popham colony, however, was abandoned shortly after, but during its extistence, the river was explored as far as what is now Vassalboro, where a cross was planted.

The Plymouth Company gave up its charter and was supplanted by the Plymouth Council in 1620. In 1625 this Council made grants to Sir Fernando Gorges and Mason of all territory between the Merrimac and Kennebec rivers. Later the territory between the Piscataquis and Kennebec rivers was assigned to Gorges, and, by order of the Crown, he was designated Lord Proprietor of the Province of Maine, with its capital in what is now Saco.

As early as 1622 there was an English fishing settlement on Damariscove Island and by 1623 there were settlers on Arrowsic Island, at Damariscotta, Pemaquid and on the St. Georges River. Pemaquid is said to have been one of the busiest spots on the New England Coast with a population of over 500, and "more important than Quebec."

In 1629 a Grant was made by the Plymouth Council to the Pilgrim Colony called the Plymouth, or Kennebec Patent. It conveyed exclusive trading rights to a territory 15 miles wide on either side of the Kennebec River, extending from Topsham to the Wesserunsett River at Cornville. At this time there were no settlements on the Kennebec. Very shortly a trading post was established at Cushnoc (now Augusta).

In 1635 the Plymouth Council surrendered its charter and in 1639 the King set up a new company with a Provincial Charter to Gorges, who three years later incorporated Georgiana, (now York) as a city and shire town. In 1646 a French Jesuit mission to the Indians was established at Gilleys Point, three miles north of what is now Augusta.

The native Indians inhabiting Maine formed the Abenaki nation, composed of four tribes: The Sokokis, living in the valley of the Saco River; the Anasagunticooks on the Androscoggin; the Canibas on the Kennebec; and the Wawenocks on the St. Georges River. In addition there was another powerful tribe, the Etechemins, living in the region between the Penobscot and St. Johns Rivers. It is estimated that the total Indian population of Maine for the year 1615 was 37,000.

The Canibas tribe had an important village and fort at Teconnet, at the junction of the Kennebec and Sebasticook Rivers. The Plymouth Company had established trading posts on the south side of the Sebasticook River in 1653, these being conducted by Messrs. Clark and Lake, and by Richard Hammond.

In 1652 Maine was annexed to Massachusetts. By 1660, of the 80,000 English colonists, 5,000 were settled in Maine. King Phillip's War in 1675, the first of the ever-recurring conflicts, soon spread to Maine. The 13 settlements were completely devastated within six weeks, many of the refugees who escaped, seeking safety on Monhegan Island.

Much of the trouble with the Indians was due to habits of traders, plying the natives with rum and then cheating them in trade. Another cause was misunderstanding as to sale or ownership of land. The Abenakis were a nomadic people with little or no personal ownership of land. The land belonged to the tribe. When land was sold, it meant to the Indian, the right to hunt and fish, not sole and permanent possession.

The War in Maine was terminated by 1678 by what was known as the Peace of Casco, only to break out again in 1685 when Pemaquid was captured and its fort destroyed. Falmouth, now Portland, was captured in 1690 and the only settlements left in Maine were Wells, York, Kittery, and the Isle of Shoals. During this war Teconnet was used as a prison station for English captives, until they could be ransomed or sold into slavery in Quebec. This second Indian War ended in

Photograph of pencil drawing of Fort Halifax after its completion.

1692, but four years later fighting was resumed. Pemaquid was again captured and the countryside devastated. With the Truce of 1698 there was comparative peace until Queen Anne's War of 1702. By 1707 the only settlements left in Maine were Kittery, York, Wells, Berwick, Winter Harbor, and Casco. Hostilities ceased in 1713 with the Peace of Utrecht. A fort was built at what is now Brunswick, settlement made on Arrowsic, the fort at Pemaquid restored, and a new fort erected on the St. Georges River. Warfare broke out again in 1721 during which the Abenaki village at Norridgewock was destroyed by Capt. Church's expedition, most of the Indians fleeing to Canada. Dummer's treaty in 1725, resulted in a short period of peace and by 1735 the territory had a population estimated at 9,000, with nine towns and several plantations. The War of the Austrian Succession in 1743 again caused devastation, although garrisons were maintained at Fort St. Georges. Pemaquid, Richmond, Brunswick, and Saco. It is said that as a result of this war, only two white families were left living on the Kennebec River north of Merrymeeting Bay.

In 1753 the Plymouth Company petitioned Governor Shirley for the erection of a Fort at Teconnet Falls, considered the strategic point on the highway between Maine and Quebec. In 1754 General Winslow with 800 soldiers ascended the Kennebec and established Fort Halifax at the junction of the Kennebec and Sabasticook Rivers. A stockade 800 feet square was erected; together with five buildings, cannon and arms being brought up by scows from downriver. A garrison of 80 soldiers was maintained here. A whale-boat express to Falmouth was established, running down the Kennebec to Merrymeeting Bay, thence up the Androscoggin to Brunswick, and by overland trail to the New Meadows River and Casco Bay, making the trip in 20 hours. This same year the Plymouth Company built Fort Western at Cushnoc (now Augusta).

The last fighting with Indians at Fort Halifax occurred on May 15, 1757. The fort was garrisoned until after the Peace of Paris of 1763, when it was deactivated. The protection afforded by the erection of Fort Halifax resulted in 11 families settling in the area. In 1766 the Plymouth Company granted 18,610 acres of land, extending 15 miles on both sides of Kennebec River, to five men known as proprietors of the Kennebec Purchase, on condition that they settle 50 families there within four years. The area, known as Kingfield Plantation, later, in 1771, was incorporated as the town of Winslow. By 1771 the towns of Hallowell, Vassalborough, and Winthrop also had been established.

As water travel was about the only means of transportation, the early settlements were made first on the off-shore islands and then on the coast and along the main rivers. The rich fisheries certainly were sources for income, while fur-trading with the Indians promised attractive profits, at least during periods of respite from raids. One cannot but admire the determination

of those early settlers who, despite almost complete devastation, not once but at least on five occasions within 85 years, came back, again and again, to re-establish their settlements in what was practically a wilderness. Life was hard, devoid of even minor comforts. There are no vital statistics, of course, but death must have taken its toll, quite as often from disease, as from warfare. Medical care was practically non-existent and only later in the Colonial period do we find record of any doctors, and these, with few exceptions, had little or no formal training.

It would seem that the desire to own land was the real lure that attracted settlers. Possession of land, even in a wilderness promised more than living in city slums or as tenant farmers in the old Country. So it is not surprising that, as physicians gradually came to this area, they frequently became involved in developing and selling land.

One of the proprietors of the Kennebec Purchase was a wealthy Boston physician, Dr. Silvester Gardiner, who came to Pownalborough in 1760 and developed Gardinerstown, now Gardiner, building dams, mills, and developing farms and establishing what might be called a wholesale apothecary business, although not practicing Medicine.

In 1771 Dr. John McKechnie came to Winslow and settled on the west side of the river in Teconnet village where he built a log cabin on the banks of the Messalonskee stream. He was employed by the proprietors of the Kennebec Purchase to survey and sell lots, but, as the only doctor, he practiced medicine "on the side."

Arnold's heroic but ill-fated expedition to Quebec brought his army of some 700 soldiers and 50 Indians up the river in 1775, stopping first at Fort Western and then at Fort Halifax. This brought 22 year old Dr. Isaac Senter, the Army's only surgeon, to this region. While studying medicine at Newport, Rhode Island, with Dr. Thomas Moffat, a Scotch physician of eminence, the news of the Battle of Lexington arrived. Dr. Senter immediately joined the Rhode Island troops and accompanied them to Cambridge as a surgeon, where later he was assigned to the Arnold expedition. His journal states that there was considerable sickness among the soldiers, largely dysentery and diarrhoea, and because of that he was kept at Fort Halifax for three days. Dr. McKechnie put aside his real estate business and helped in caring for the sick.

After the end of the Revolutionary War, General Henry Dearborn, a physician, who had been a Captain in Arnold's Army, settled in Gardiner, having been attracted by the beauty of the region during the March to Quebec. It is doubtful if he practiced Medicine to any extent as he was twice Marshal of Maine, twice elected to Congress, and later Secretary of War in President Jefferson's Cabinet, 1801 to 1809. In the War of 1812 he was senior Major-General of the United States Army. He had studied Medicine with Dr. Hall Jackson in Portsmouth, New Hampshire, but gave up his medical career and fought at Bunker Hill.

Dr. Benjamin Vaughn had been a member of the British Parliament but because of his sympathies for the Colonies he had left England for France. In 1796 he settled in Hallowell where he developed gardens, orchards, and nurseries, doing much to improve agriculture.

In 1791 Dr. Obediah Williams, who had served at the Battle of Bunker Hill, settled in Winslow and practiced medicine on the west side in Teconnet Village. When in 1796 Dr. Appleton came to Teconnet, Dr. Williams was pleased to turn over to the younger man the arduous duties of practicing medicine. Dr. Appleton's journal states the town's widely scattered population numbered about a thousand souls, "not including Indians untaxed."

The life of a country doctor in those days was not an easy one. Visits to patients travelling 15 miles distant, were common. Carriages were unknown, roads were bad but, with saddle bags filled with drugs slung over the horse's back, the country practitioner rode many miles, every week, on his errands of healing. Dr. Appleton's account book shows charges against 96 different persons the first year, the first one being against his predecessor, Dr. Williams, for pulling a tooth. Not infrequently contracts by the year were made with patients. For example, a certain Jonathan Clark agreed to furnish the doctor's family for a year with boots and shoes in return for medical treatment for the same period. Another, Jabez Mathews, agreed to give 2½ cords of wood for such medicine as he should need for a year. It is also stated that the doctor made a contract to treat one family for itch for a year, for certain goods in kind.

Physicians of this era were indeed versatile. They undoubtedly had to be for they, like hard money, were in scarce supply. So, like Appleton, they practiced dentistry, at least the extraction of teeth; were apothecaries, compounding their own drugs; dabbled in real estate; and actively participated in civil affairs. Among Dr. Appleton's business ventures, he owned and operated a distillery for making whiskey from potatoes. He conducted the first apothecary shop, and did much to establish the first bank in this area, being a director for many years. In the absence of a regular minister, he was frequently called upon to conduct religious services, including preaching the sermon, in the local meeting house. When in 1802 the village was to be incorporated as the Town of Waterville, a warrant to call the first Town Meeting was issued to "Moses Appleton, physician . . . the meeting to be held on July 26th in the East Meeting House."

It is interesting to note how frequently during this early period, physicians dealt in real estate. Few people know that, in 1800, Dr. John Collins Warren, Professor of Anatomy and Surgery at Harvard Medical School, purchased what now comprises the towns of

Hartland, St. Albans, and Palmyra, for 12½ cents an acre. This became known as Warrenstown and evidently was an excellent speculation for the good doctor.

While to some, the varied activities of these early practitioners might seem to indicate a minor interest in the practice of Medicine, one should not be too critical, bearing in mind that these doctors were pioneers, bringing their services to new areas, previously devoid of any medical care. As such they felt themselves as integral parts of these communities, responsible for economic and social developments, while at the same time earning a livelihood for themselves and families. Medical education in this Country was in its infancy and a majority of these physicians were trained by the preceptorship method. Appleton was probably the first physician in this area with a sort of formal education and this was limited to a two year's course of lectures and demonstrations. Indeed, Medicine itself, in this era, was a far cry from what it is today. Bacteriology did not exist, and the conception of Physiology and Pathology was, to say the least, sketchy.

A perusal of Appleton's journal reveals both a scientific atttitude and a habit of keeping rather good records. Under the heading "Obituary of Waterville" he lists his causes of deaths. Pope and Patterson analyze these, stating that "Despite changes in medical terminology, Dr. Appleton's "Obituary of Waterville" records 25 causes of death which are recognizable today, though, to be sure, there were 27 deaths ascribed merely to "fever." Surprisingly, there was not a single death recorded as due to heart disease in the whole 30 years.

TABLE I

DR. APPLETON'S DIAGNOSIS OF THE CAUSE OF DEATH

1. Phthisis pulmonalis (Tuberculosis)
2. Dysentary (Diarrhea and enteritis)
3. Dropsy (Nephritis)
4. Old age — infirmity of age
5. Lung fever (Pneumonia)
6. Accidents
7. Paralysis (Cerebral hemorrhage)
8. Whooping cough
9. Cynanche trachealis (Dyphtheria)
10. Puerperal fever
11. Intemperance (Alcoholism)
12. Cholera morbus
13. Carcinoma
14. Typhus fever (Typhoid fever)
15. Insanity
16. Measles
17. Phrenitis, Cephalgia (Encephalitis)
18. Spotted fever (Meningitis)?
19. Epilepsy
20. Rupture of uterus
21. Suicide
22. Hernia
23. Diabetes
24. Inflammation of bowels (Appendicitis)
25. Stoppage of bowels

This may be due to changes in medical terminology, but in Boston during the same period, heart disease is not listed as a major cause of death."

Tuberculosis accounted for 22.3% of all deaths in Waterville, seven in one family.

Quoting again from Pope and Patterson, "No part of Moses Appleton's unique record throws more light on the scope of surgery in rural New England in the first third of the 19th century than the cryptic notations on the operations performed by him during the first 32 years of his practice in Waterville. In this period, under the heading "Operations" he recorded a total of 31 operations consisting almost entirely of what may be called traumatic surgery. The principal conditions treated were fractures and dislocations, with occasional amputations. The brief notations: "trephined," "for the emphysema," and "encysted tumor" indicate the only departures from the traumatic field. The very rarity of surgical intervention in the busy practice of a well-trained physician of that day speaks eloquently of the limitations of surgery before the concepts of bacteriology, the development of general anesthesia, and the practice of antisepsis or asepsis."

So despite the numerous non-medical activities one must conclude that he maintained a serious scientific interest in his practice. In the Centennial History of Waterville the story of Moses Appleton ends with this sentence: "A skillful physician, kind and courteous in manner, he was always welcomed by his patients as a friend as well as a physician. He died May 5, 1849." Could any doctor ask for a finer tribute? Certainly he came to Teconnet to render service to an infant community. In addition to practicing Medicine he aided in the development of that Community. He became an active good citizen, as well as a physician, and must have had a most satisfactory life.

It is the hope of this writer that this article may stimulate readers to study the more comprehensive story by Doctors Pope and Patterson in the Spring number, 1962, of the Harvard Medical Alumni Bulletin which gives an intriguing picture of Colonial Medicine in Maine.

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The Role Of The Composite Resection In Head And Neck Cancer

LORING W. PRATT, M.D.*

Large tumors of the head and neck have been seen with increasing frequency in recent years. They occur more often in the male, and their increasing incidence is thought to be due partially to the extended life span resulting from medical advances. Many feel that this increase is related to the use of tobacco and the excessive use of alcohol. Ancient writers rarely reported, for example, carcinoma of the tongue. Hippocrates reported it, but considered it a rarity. In his time the anticipated life span was about forty years and tobacco was not in common use. Even today we see little of this problem in the younger age group.

Cancer of the head and neck comprises six percent[1] of all cancers. Those of the mouth, tongue, tonsil, palate, and pharynx comprise a significant part of all head and neck cancers. One therapeutic approach to these lesions is surgery,[2] and many are best handled surgically by means of the composite resection.

The general principle of en bloc resection of a primary tumor with its associated lymphatic bed is the current sine qua non of tumor surgery and is applicable to lesions of the head and neck in many instances.[3,4,5,6] In certain anatomic locations, the tumors and their lymphatic beds may be handled en bloc by utilizing the composite resection, which is also known as the combined resection or the Commando Procedure.

This technique should not be regarded as a specific operation such as an appendectomy or a radical mastectomy, but should be considered as an approach to an anatomical area, for it may be widely modified to meet the needs of the particular situation encountered in any individual instance. It is important that the composite resection be utilized in this manner as the advantage of its application to specific problems hinges upon this characteristic.

TECHNIQUE

The procedure itself utilizes the customary double "Y" incision, as for a radical neck dissection, except that the anterior limb divides the lower lip at or near the midline (Fig. 1). A radical neck dissection is first accomplished to remove the regional lymphatic bed. When the radical neck dissection approaches its superior border, continuity with the mandible, floor of mouth, and tongue are maintained and the specific structures to be removed are tailored to meet the needs of the particular tumor. The lower lip is then divided in order to obtain a better view of the ramus of the mandible and this incision is connected with the anterior arm of the superior "Y" incision. During this maneuver nearly the entire homolateral mandible is exposed. The area of mandible to be resected is dependent upon the nature of the lesion. If bone is grossly involved, the entire mandible or the mandible as high as the mandibular notch is removed in order to make certain that the entire inferior alveolar canal and marrow space is removed with the specimen. The mandible may be sectioned with a Gigli saw, an osteotome, or a Stryker saw. In the elderly edentulous mandible it may be divided with rib cutters.

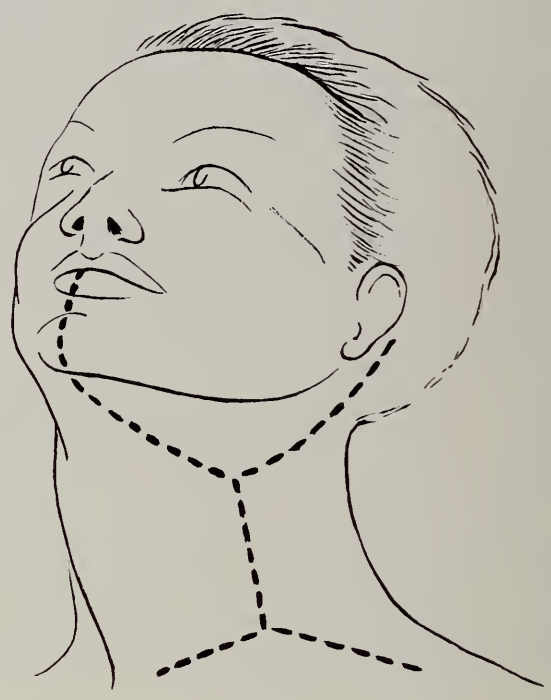

FIG. 1. The incision for the composite resection.

Dissection of the side of the tongue, the floor of the mouth, the base of the tongue, the tonsil, or the soft palate, is then accomplished depending upon the primary site of the lesion which is being removed (Fig. 2). It is also possible to associate this procedure with total laryngectomy, pharyngectomy, and excision of the base of the tongue so that an en bloc specimen of neck, larynx, jaw, and part of tongue may be removed as a single specimen, in continuity with its regional lymphatic bed. The addition of these other

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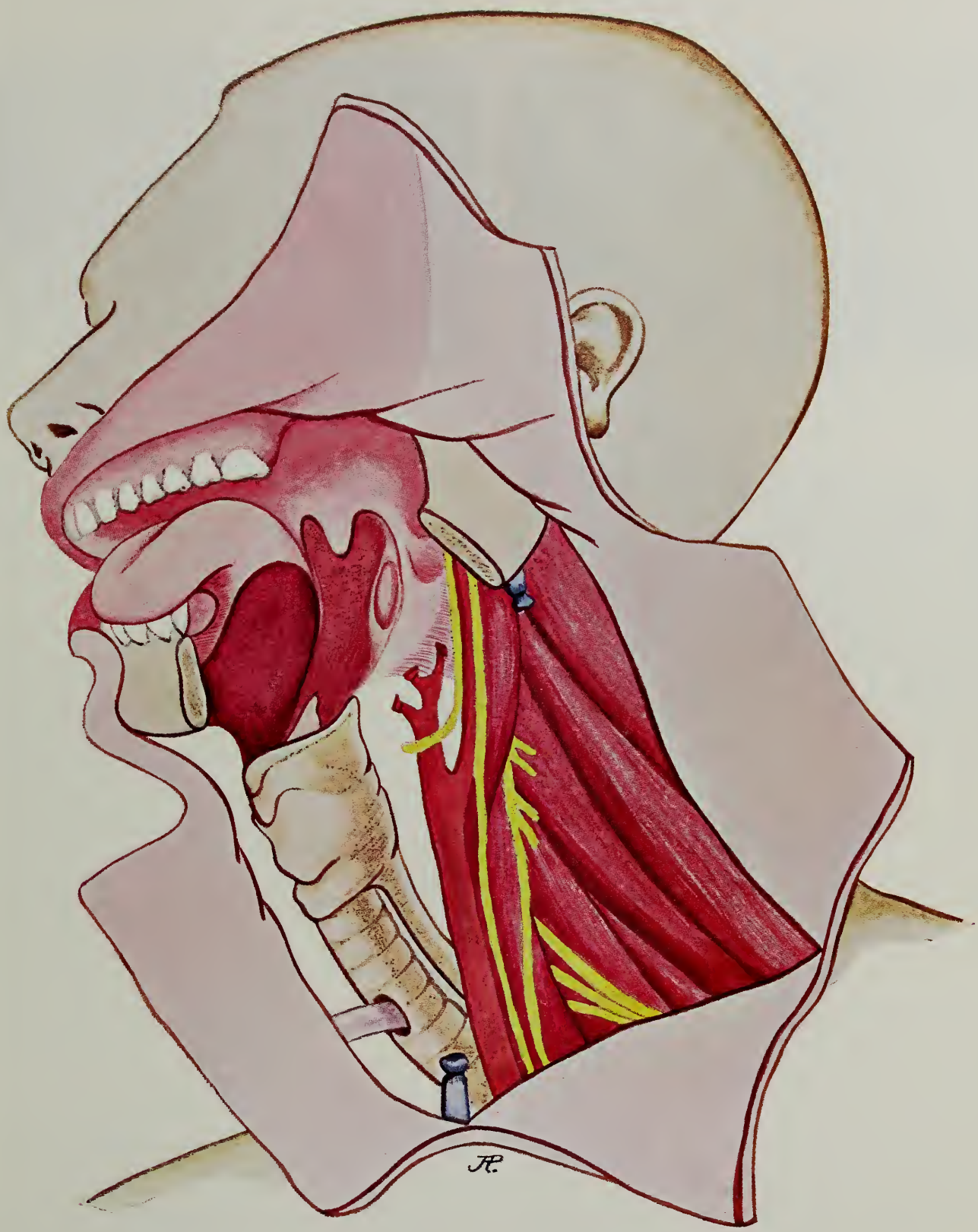

FIG. 2. This semidiagrammatic representation is of the surgical field at the close of a composite resection. The neck dissection has been completed and the specimen (carotid sheath contents, sternocleidomastoid muscle, internal and external jugular veins, mandible, and part of base of tongue) has been removed.

This illustration shows the retracted skin flaps, and the remaining structures of the neck. Clearly seen are the larynx and trachea with a tracheostomy tube in place; the common carotid artery, in conjunction with the vagus nerve going cephalad to the bifurcation where the external carotid has been divided and excised, leaving the internal carotid artery in place; the superior and inferior ends of the ligated internal jugular vein; the cut ends of the cervical sensory roots, and the phrenic nerve crossing the scalenus masculature. The hypoglossal nerve stump is seen near the carotid bifurcation where its resection has been accomplished. The soft palate, tongue, tonsils, and hypopharynx are clearly visualized from this approach.

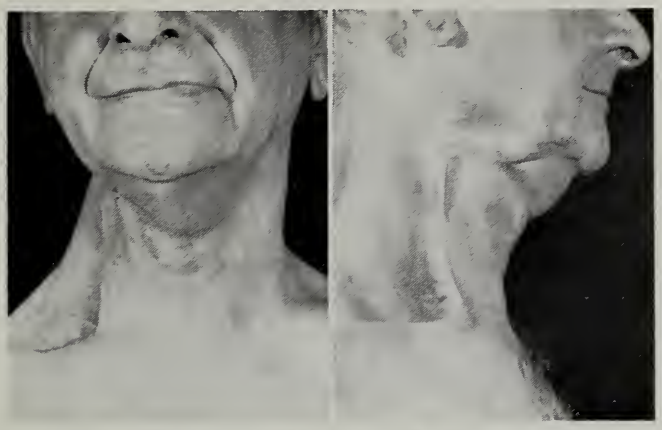

FIG. 3. Views of 74 year old male neck following right radical neck dissection (9 months postoperative).

areas to the operative procedure increases its hazards and its morbidity. In a series of 140 straight-forward composite resections the operative mortality was reported as one case.[4] Temporary tracheostomy is often a necessary part of this procedure.

INDICATIONS

The indications for utilization of the composite resection are found among the malignant lesions of the mandible, floor of the mouth, lateral side of tongue and base of tongue, tonsils, pterygoid fossa, and buccal mucous membrane over the mandible.[1,7,8] These tumors are serious, persistent lesions, and in some instances are best treated with irradiation. Bulky lesions at the base of the tongue may be best controlled with irradiation as primary therapy, although subsequent surgery may be necessary to control the lesion and/or its metastases. Carcinoma of the tonsil is in many instances best treated by deep x-ray irradiation, using the composite resection in cases of radiation failure as an attempt to control either the primary or the metastatic lesion which has been unsatisfactorily controlled by radiation therapy. Although the primary lesion is often well controlled by x-ray therapy, metastases may be better removed by surgical excision.

RECONSTRUCTION

Following surgery, reconstruction of the missing mandibular fragment may be accomplished by means of a Steinman pin, Vitalium bar or mesh, autogenous rib or other suitable material.[9,10] It is undesirable to do this in any case in which there is doubt about the completeness of removal of the primary tumor, and it is equally undesirable to do this as a part of the primary procedure in cases which have been irradiated. In general it seems that secondary repair of the defect is more desirable and should be undertaken only after reasonable healing has taken place and the surgeon is confident that the tumor has been completely eradicated.[9,11]

The ultimate deformity of a composite resection, in which it is possible to preserve most of the mentum, is not great (Fig. 4, 5). Functional results are excellent, and even without extensive dental rehabilitation these people eat and function well. The deformity is not much greater than that of a radical neck dissection by itself. (Fig. 3, 4, 5).

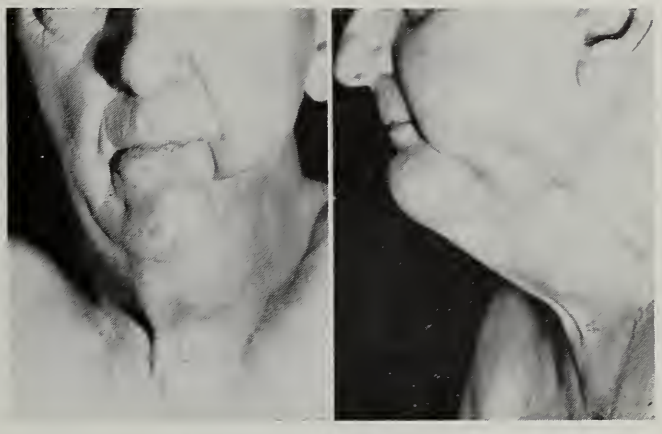

FIG. 4. Views of 74 year old male neck following left composite resection for carcinoma of floor of mouth and tongue (3 months postoperative).

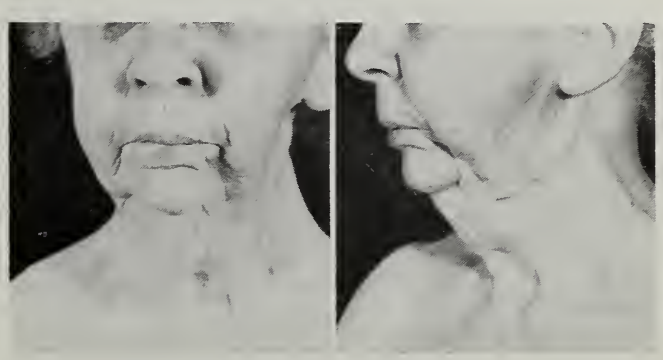

FIG. 5. Views of 73 year old female neck following left composite resection for carcinoma of floor of mouth (17 months postoperative).

COMPLICATIONS

The complications of composite resection are sometimes difficult to manage. A pharyngostomy is at times constructed as a part of the primary procedure, and the care of a pharyngostomy is always an added chore to the nurses and an added problem in the management of the patient. Secretions from the pharyngostomy readily drain into the tracheostomy, producing respiratory problems unless special nursing care is supplied. Secretions running over the skin flaps interfere significantly with primary wound healing. These complications are all more common and more difficult to control in previously irradiated patients.

Fistulae may develop between the oral pharynx and the external part of the neck, or they may develop from the oral pharynx into the wound area so that the salivary juices dissect down under the neck flaps and delay healing. A salivary fistula running along or across a carotid artery (and particularly across the stump of the ligated external carotid) is a great hazard which on occasion will slough and produce rupture of the carotid

artery. It is more likely to rupture in a previously irradiated case. The incidence of fistulae can be reduced by using a meticulous technique of closing the wound to assure a water-tight seal. This is at times enhanced by implanting a dermis graft over the line of suture as a buttress. By wrapping or covering the carotid artery with a dermis graft or by covering it with a muscle flap in order to protect it from exposure to salivary juices, rupture may be avoided. In cases where such rupture is threatened immediate reinforcement of the artery with a dermis graft and the application of a rotated non-delayed pedicle flap from the chest should be carried out to protect this vital structure.[12,13,14]

Conclusion

In conclusion, the composite resection is to be utilized as an approach to the area of the jaw, tongue, floor of mouth, or tonsil by way of which varying procedures may be performed as indicated. It permits en bloc resection of a primary tumor with its regional bed without greatly deforming or inconveniencing the patient.

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My Medical Creed

If medicine is not your greatest fun, you are at the wrong job. Watch the clock and you will often miss the train. Overtime is opportunity. The cases from which you learn the most come on Sundays and holidays. The greatest satisfaction of a medical career is the acquaintance of the men who are doing things and being counted by them "one of the gang." Meet the busy men and take their overflow jobs — scientific jobs, I mean. Join a medical society of national scope and go to its meetings. Get a hospital connection. Never resign. Work to the age limit. It will come quickly enough. To spend a medical life doing nothing but private practice numbs the soul and kills the imagination. Set aside a stated time — I take an evening a week — for scientific medicine. Spend it in your library, the hospital library or in a laboratory. Come to an understanding with the family about it, peacefully if you can, by force if necessary. Read regularly something worth while besides medicine. Often, in such reading, words, phrases and even ideas which can be used in medicine will literally jump out at you. Make yourself better than the men of your community in at least one thing. What this medical thing is — notice I say *medical* — matters but little.

Mosher

Ocular Complications Of Drug Therapy

KEVIN HILL, M.D.*

The complexity of the eye in terms of its embryologic derivation, anatomy, innervation and physiology renders it susceptible to the effects of a multitude of drugs. Although in many instances these effects are beneficial, there are other instances in which the eye is adversely affected. Carroll,[1] for example, was able to compile a list, by no means exhaustive, of fifty causes of toxic amblyopia, beginning with aniline dyes and ending with tryparsamide. Grant's[2] recently published "Toxicology of the Eye" is an admirable compendium which emphasizes the susceptibility of ocular tissue to the toxic effects of many commonly used chemical agents.

In our present state of polypharmacy, the use of newly developed therapeutic agents is often widespread before untoward side effects become manifest. It is not surprising that some of these side effects are upon the eye. There also are those drugs which exhibit toxicity for the eye only after prolonged administration. Among the several drugs recently reported to affect the eye adversely, three, triparanol, chloroquine and the corticosteroids, seem to be of sufficient interest and significance to warrant further discussion.

TRIPARANOL

Triparanol, or MER-29, inhibits cholesterol synthesis and has been used to lower the concentration of cholesterol in the body. It has been estimated[4] that approximately 300,000 patients have been given triparanol. Cutaneous changes associated with triparanol administration were reported by Achor, Winkelmann, and Perry[5] in 1961. They reported the occurrence of alopecia, change in the color of hair (poliosis), dry skin, icthyosis and blepharoconjunctivitis. Of nine patients who exhibited some or all of the cutaneous side effects, two were classed as moderately severe reactions. Both of these patients subsequently developed anterior and posterior subcapsular lenticular opacities. These cases, with an additional one, were separately reported by Kirby, Achor, Perry and Winkelmann[6,7] and the pertinent details are abstracted from their report as follows:

CASE REPORTS

Case 1. A thirty-six year old white male with idiopathic hypercholesterolemia was treated with triparanol in increasing doses for eight months (Fig. 1.). While taking 1 gram of triparanol each day he developed icthyosis, alopecia and blepharo-conjunctivitis. Triparanol was discontinued and in three months the skin and hair began to return to normal. The blepharo-conjunctivitis did not respond readily to treatment and the patient was seen by an ophthalmologist for several months after cessation of triparanol. During this period the vision was normal and the lenses clear. Eight months after triparanol therapy was stopped the patient noted rapid onset of blurred vision. His visual acuity with correction was then found to be O.D. 20/20 and O.S. 20/20— but in both lenses there were definite grayish, irregular posterior subcapsular opacities and thin clear anterior subcapsular clefts with fine flecks in the superficial cortex.

Except for idiopathic hypercholesterolemia, the patient was in good health and had not taken any medication other than triparanol in the twenty months preceding the development of cataracts. There was no known exposure to radiation or toxic substances and the family history for presenile cataracts was negative.

Case 2. A fifty-six year old white male with coronary artery disease and diabetes mellitus was treated with a number of drugs including triparanol, 250 mg. daily for three and a half months (Fig. 1). He developed icthyosis, alopecia, poliosis and blepharoconjunctivitis. The vision was normal and the lenses clear until eight months after triparanol therapy was stopped. The patient noted blurred vision at that time which was unimproved by refraction. When examined two months later the vision was O.D. 20/30 and O.S. 20/25. Posterior subcapsular and milder anterior subcapsular opacities were present in both lenses. There was also early nuclear sclerosis. Vision decreased rapidly to O.D. 20/80 and O.S. 20/70.

Case 3. A six year old male with familial hypercholesterolemia and cutaneous xanthomatosis was treated with triparanol for fifteen months (Fig. 1.). Icthyosis and poliosis occurred but the vision was 20/25 O.U. and both lenses were clear. The dosage of triparanol was reduced and therapy continued for five more months during which time the skin and hair changes regressed. At the end of this time the vision was 20/30 O.U. and posterior and anterior subcapsular opacities were noted in both lenses.

Although the age and diabetic state of the second patient suggest that these factors, rather than triparanol, may have been responsible for the formation of his cataracts, the circumstances of the two other cases support the inference that triparanol was the responsible agent. In all three cases, moderately severe changes in the hair and skin were followed by the development of posterior subcapsular lenticular opacities. Two of the patients had concomitant persistent inflammation of the lids and meibomian glands.

At present, any explanation of the mechanism of cataract production by triparanol, if indeed the drug is cataractogenic, is speculative. Possible mechanisms include:

1. Direct toxic action of the drug, or of a breakdown product, upon the lens.
2. Interference with ocular metabolism so that the lens, entirely dependent as it is upon nutrients

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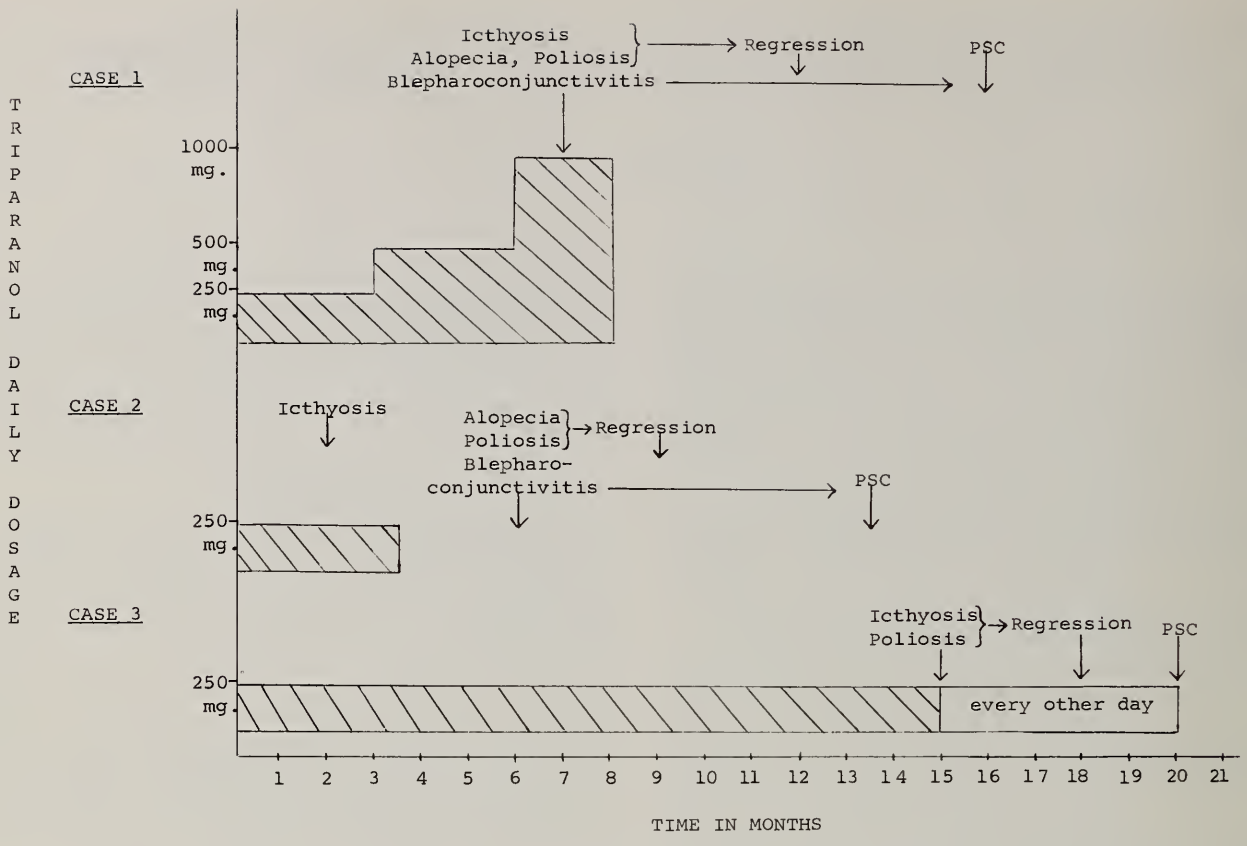

FIG. 1

provided by the intraocular fluid, is inadequately supplied.

3. Reaction of the lens as one ectodermal structure to disease of other ectodermal structures (skin and hair), such as presumably occurs in atopic dermatitis.
4. Interference with cholesterol metabolism and/or the effects of changes in other metabolic processes secondary to alteration of cholesterol metabolism.

The development of cataracts in rats given triparanol has been noted and this observation supports the possibility of a similar effect of the drug upon the human lens. It is possible that further study of these experimentally produced cataracts may lead to the explanation of triparanol cataractogenesis. The drug has been withdrawn from the market because of various side effects observed.

CHLOROQUINE

Chloroquine was initially found to be effective in the treatment of malaria. Subsequently, chloroquine and its related compound, hydroxychloroquine, were found to be useful in the treatment of amebiasis, rheumatoid arthritis and chronic discoid and systemic lupus erythematosus. The use of these agents has been widespread for several years, during which time reports of ocular toxicity attributable to chloroquine compounds have accumulated in the literature. The early reports of ocular complications were of rather ill-defined subjective visual disturbances, possibly due to affection of the accommodative mechanism[8] although this observation could not be confirmed by Calkins.[9]

Later, more specific and serious complications of chloroquine administration were noted, namely keratopathy and retinopathy. *Keratopathy:* Corneal deposits occurring during chloroquine therapy were first reported by Hobbs and Calnan[10] in 1958. Subsequent reports confirmed this observation and the incidence of keratopathy in patients on long-term therapy has been established as from 35%[11] to 43.7%.[12]

Characteristically, symptoms of chloroquine keratopathy appear after several months of treatment, usually in fairly high dosage. Mild blurring of vision or halo vision may be noted by the patient and biomicroscopic examination then may reveal fine, white granular deposits in the very superficial layers of the corneal stroma or in the epithelium. The granules may be aggregated into small irregular lines which are usually located in the cornea at the level of the inferior border of the pupil. With time, these deposits may become yellowish and a relationship with the Hudson-Stähli line has been inferred.[13] Less commonly, corneal edema has been observed in the course of chloroquine therapy. Both types of keratopathy regress with cessation of the drug.

It is of interest that similar patterns of corneal deposits may occur after exposure to quinone-hydroquinone, quinacrine or mepacrine (Atabrine), and amodiaquine (Camoquin).

Retinopathy: More recently observed and more serious in its effect upon the visual system is the occurrence of retinopathy during chloroquine administration. Several reports of this complication have appeared since 1957.

Typically, the patient's initial complaint is blurring of vision. On occasion, concomitant corneal changes as described above have been observed but in the majority of cases, only the retinopathy was present. The initial retinal changes appear to be narrowing of the arterioles and macular edema. These changes have been described in only a few instances, possibly because many of the reported cases were not carefully examined until later in the course of the retinopathy. The later changes consist of macular pigmentary deposits, usually arranged around the fovea, thereby presenting a "doughnut" or "bullseye" appearance as pointed out by Smith.[14] The degree of pigmentation may vary from slight granularity to heavy irregular clumps of perifoveal pigment. Similar irregular pigmentary deposits have been observed in the retinal periphery of some of the reported cases. These deposits are unlike those characteristic of retinitis pigmentosa in that they lack the "bone corpuscle" appearance and the perivascular arrangement of the latter condition. The optic discs are usually normal but may be pale, indicating optic atrophy.

Various visual field defects have been noted in association with the retinopathy. The common defect is a pericentral ring scotoma within five degrees of fixation. These scotomata are bilateral and may later extend to involve the periphery, producing markedly constricted fields. Irregular quadrantic and hemianopic defects sparing fixation have been observed in several instances. Sachs, Hogan and Engleman[15] reported large altitudinal scotomata with macular sparing or pericentral ring scotoma as typical. Paracentral and cecocentral field defects have been less frequently observed.

Unlike quinine toxicity, which may result from relatively small doses, thereby suggesting a sensitivity or idiosyncrasy of the patient to the drug, the retinopathy associated with chloroquine administration develops after many months, usually two to four years, of fairly high drug dosage (200-1000mg./day). Presumably this is why the condition was not observed during the earlier widespread use of chloroquine as an antimalarial agent but was detected in patients with chronic rheumatoid arthritis or lupus erythematosus who received larger doses for prolonged periods of time. Although in several instances, the degree of visual impairment has apparently persisted unchanged after cessation of the drug therapy, other instances of clinical progression have been reported. Indeed, Cambiaggi,[16] who first reported retinopathy occurring during chloroquine administration, considered the macular pigmentary degenerative changes which he observed to be an unusual manifestation of systemic lupus erythematosus because they progressed despite discontinuance of the chloroquine. However, it should be noted that although chloroquine therapy was stopped, Cambiaggi's patient was treated with hydroxychloroquine (Plaquenil®) three months later, and it was during the administration of this drug in a daily dosage of 500 mg. that progression of the retinopathy was observed.

Recent electrodiagnostic tests (ERG & EOG) reported by Arden & Frojas[17] indicate that derangement of retinal function progresses and that additional visual field and fundus changes may become evident later.

The pathogenesis of chloroquine retinopathy is not clear. The occurrence of changes in hair color noted in a few cases of chloroquine retinopathy[18,19] and the apparent protection against actinic rays which the drug confers upon patients with disease such as lupus erythematosus suggest that chloroquine affects melanin metabolism in some way. Electro-occulographic data indicate that the retinal pigment epithelium is severely affected, and this cell layer may be the primary site of injury leading to subsequent degeneration of the retinal photoreceptors. It has been suggested[20] that chloroquine may poison the dehydrogenases important to the visual purple cycle. Cogan[21] on the other hand, noted that the macula is preferentially involved and suggested the possibility that chloroquine specifically inhibits an enzyme or enzymes essential to proper macular function.

An explanation of the progression of retinal changes after cessation of chloroquine therapy may include the following considerations:

1. It is known from the studies of Zvaifler and Rubin[22] that chloroquine is selectively distributed throughout various tissues of the body and that it is excreted very slowly. Measurable amounts of chloroquine have been detected in plasma and urine three and one-half years after the last dose was administered. The excretion patterns of chloroquine and its metabolite in rheumatoid patients differ from those of non-rheumatoid patients and it may be that such variations predispose individuals with certain diseases to development of toxicity to the drug.

2. Irreversible inhibition, either partial or total, of one enzymatic activity could lead to gradual impairment of other interrelated enzyme systems and thereby cause progression of the retinopathy. Indeed, this may be the mechanism involved in the development of such abiotrophic retinal conditions as retinitis pigmentosa.

Corticosteroids

In 1960, after more than a decade of widespread use of corticosteroids for a multitude of diseases, Black, Oglesby, von Sallmann and Bunim[23] published a report of the occurrence of posterior subcapsular cataracts (PSC) in 39% of forty-four patients with rheumatoid arthritis treated with corticosteroids for two years or longer. This surprising observation subsequently was more fully documented by these investigators.[24,25] They reported that, of seventy-two patients with various rheumatic diseases (rheumatoid arthritis, systemic lupus

erythematosus, psoriatic arthritis, scleroderma, and dermatomyositis) receiving long-term corticosteroid therapy, thirty patients (42%) developed PSC. A group of twenty-three other patients with rheumatoid arthritis not treated with corticosteroids served as controls and none of them developed PSC.

Their data indicated that the incidence of PSC was related to the average dosage received and to the duration of corticosteroid therapy (Table I). The age range of the patients with PSC was eight to sixty-one years. Sixty-three percent were less than 49 and 10% were less than 21 years of age.

Seven of the thirty patients were known previously to have clear lenses by biomicroscopic examination and were observed to develop PSC after one to six years of moderate to high doses of corticosteroids. For the most part the visual impairment was slight and did not progress significantly during an observation period averaging more than a year during which the steroid dosage was reduced in the majority of cases. One patient, however, did develop sufficient visual impairment to warrant cataract surgery.

It is obvious that a definite relationship between corticosteroid therapy and the development of PSC has not been established beyond doubt. Conversely, it cannot be said that such a relationship has been disproved.

There are several important points which must be established before conclusions of any validity can be reached. To begin with, the incidence of PSC in the general population and the relation, if any, to such general factors as age, sex, race and geographic location should be known. Statistics bearing on this point are available but for the most part they were compiled many years ago and may not be entirely reliable. Waite and Beetham's[30] careful study of 2002 diabetics and 457 non-diabetic controls, the majority presumably from the New England area, cites the following incidence of PSC: Diabetics aged 10 to 70 plus years, 6%; Non-diabetics aged 20 to 70 plus years, 8%. Although these data may correctly reflect the present-day incidence of PSC, it is quite possible that the population has changed sufficiently in a generation to render them outdated.

The incidence of PSC in patients with various chron-

TABLE I

Relation of Dosage and Duration of Corticosteroid Therapy to Formation of Posterior Subcapsular Cataracts

Duration of Therapy	*Corticosteroid Dosage Range*					*Incidence of PSC*
	Low		*Moderate*		*High*	
	<10mg.[1]	*Low-Moderate*	*10-15mg.*	*Moderate-High*	*>15mg.*	
<1 year	2	0	4	1	3	None
1-3 years	6 (1)[2]	2	15 (4)	8 (4)	7 (7)	42%
4 years & over	1	4 (1)	8 (4)	6 (4)	5 (5)	58%
Incidence of PSC	11%	17%	30%	53%	80%	

1. Corticosteroid dosage is expressed as milligrams of prednisone administered daily. In some cases an equivalent dose of another corticosteroid was used. Patients whose dosage varied are designated in intermediate categories.
2. Number of patients with PSC shown in parentheses.

These investigators could find no correlation between the development of PSC and the age of the patients, the severity and duration of their systemic disease, the coexistence of ocular disease known to be associated with complicated cataracts, exposure to ionizing radiation or trauma. Their conclusion was that the PSC observed in their patients represented an adverse effect of corticosteroids and they recommended that the lowest possible dose of corticosteroids be used in long-term therapy.

A number of other investigators have observed a much lower incidence of PSC in patients receiving prolonged corticosteroid therapy. Gordon and his coworkers[26] reported an incidence of 9% PSC in forty-five rheumatoid arthritics treated with corticosteroids for two years or longer and, in a similar group of patients, Pfahl et al.[27] reported an incidence of 5%. Hart et al.[28] could find PSC in only one of sixty-seven patients. In a study[29] of fifty-six patients with chronic diseases other than rheumatoid arthritis who had received prolonged corticosteroid therapy, 5.4% were found to have PSC.

ic diseases not treated with corticosteroids is also pertinent to the problem. It is felt by some that PSC occur more frequently in rheumatoid arthritis than in the "normal" population but again, accurate current statistics are not available. Oglesby et al. felt that the absence of PSC in their group of twenty-three rheumatoid arthritics not treated with corticosteroids was reasonable evidence that the PSC in their other patients were related to corticosteroid therapy. The occurrence of PSC in patients with other chronic diseases treated with corticosteroids suggests that something other than a "rheumatic" factor is responsible but again these observations must be judged in the light of knowledge of the incidence of PSC in the natural course of the disease.

Assuming that corticosteroids are cataractogenic, other questions present themselves: 1. Are all corticosteroids in comparable dosages equally capable of producing PSC? In the studies mentioned above, prednisone, methylprednisone, triamcinolone and dexamethasone were administered to patients who developed PSC. The data thus far are insufficient to answer this

question, however. 2. What is the mechanism of cataract production by corticosteroids? Attempts to induce cataracts in rats by corticosteroid administration have not been successful.[31] Studies of the pathology of PSC presumably caused by corticosteroids are meager and by no means conclusive.

Thus we are confronted by an intriguing observation, at present inadequately confirmed, but of potentially great significance.

Summary

Three types of pharmacologic agents, triparanol, chloroquine and related compounds, and the corticosteroids, have been reported to affect adversely the human eye. Corneal infiltrates, lenticular opacities or retinal degeneration have occurred in patients treated with one or another of these drugs. Whether or not the ocular lesions observed can be definitely attributed to these drugs in all cases is not yet established. The data on the possible cataractogenic effect of triparanol, although suggestive, are insufficient as yet to be conclusive. The role of chloroquine and related compounds in the production of corneal deposits seems to be definite; the role of these agents in the production of retinal degeneration is perhaps open to question but the weight of reported evidence heavily favors a casual relationship. The question of corticosteroid-induced cataracts is an exciting and disturbing one which, for the present, must be held *sub judice.*

The above examples of possible and probable ocular complications of drug therapy serve to remind all physicians of the potential hazards of the therapeutic agents they employ. It is wise for us all to remember Osler's[3] admonition, "Remember how much you do not know. Do not pour strange medicines into your patients."

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The Health Film — A Department Service

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The purpose of this article is two-fold: to acknowledge the gratifying response from many individuals, groups and sources in the State to the film service carried on by the Department through the Office of Health Education, and to describe briefly the scope and extent of the service for those who are as yet unacquainted with it.

Every day it is becoming increasingly evident that the health film, as an instrument of community education, and as a supportive, visual tool to individual, community and special group understanding of current health problems and needs, is here to stay. The following film-use evaluation table (June, 1961 — June, 1962) demonstrates the above fact impressively:

Film Category	*No. of Requests*	*Viewing Audience*
Aging	28	393
Alcoholism	154	6,823
Cancer	66	257,582
Communicable Diseases	99	4,060
Dental Health	140	7,673
First Aid and Safety	82	3,496
General Health	184	11,074
Maternal and Child Health	124	251,093
Mental Health	835	15,517
Nursing	23	533
Nutrition	182	6,785
Obstetrics	10	80
Optical	14	518
Personal Hygiene	87	3,333
Posture	49	1,436
Sanitation	70	1,418
Venereal Diseases	33	643
	2,180	572,457

These figures do not include telephone requests which amount to several daily, nor those which might be obtained through groups with which some of the films have been placed on long-term loan for distribution among their own personnel and audiences — such as the State Extension Service; those loaned for teaching or promotional purposes — such as the developing homemaker service groups in the State or similar demands which arise as program focus changes or special needs dictate.

Films in greatest demand are those which result from the current emphasis on community mental health, including growth and development series and films on family living. Although the Division of Mental Health formerly in this Department has now been absorbed by the recently established Bureau of Mental Health in the Department of Mental Health and Corrections, the film service offered by the Bureau is maintained as usual by the Department of Health and Welfare through arrangement for this service between the two departments.

Other films carried by the Department are those placed in its film library on a long-term loan basis by such sources as the Public Health Service; the National Health Council; the National Foundation; Johnson & Johnson; Kimberly-Clarke Corporation; Equitable Life Assurance Society of the United States, and similar agencies.

Schools, including nursing and teacher training institutions, form the major borrowing source, with hospital and church groups following.

Although not specifically designed to furnish the professional health film for physician and allied medical group use in the State, the film library is occasionally approached in this respect. Staff members in the Office of Health Education are always at hand to receive requests and to seek out sources of reference for films on many subjects to meet teaching, previewing, speaking or similar needs and to obtain — from many film reference resources — the information requested or the film itself for preview or other purposes. To this end, a comprehensive film reference library is maintained which includes such film sources as:

The American College of Surgeons
The American Medical Association
The Center for Mass Communications
The American Hospital Association
The Communicable Disease Center — Public Health Service
The Film Reference Guide for Medical and Allied Sciences
United States Government Films
United States Information Agency Films

In addition, an up-to-date reference library of films from many of the leading pharmaceutical houses, insurance companies, State health departments as well as a substantial number of commercial film sources is maintained by this Office as part of its audio-visual service. Through the large volume of professional health literature to which the Department subscribes,

*Health Education Consultant

early notice of new film publications on virtually every health subject is obtained. In addition, the Communicable Disease Center; the regional office of the Public Health Service and field representatives from pharmaceutical and commercial film sources keep the Office *au courant* as to what is available for use in this direction.

As for the film library itself, the Department distributes currently some 480 prints of films and filmstrips representing approximately 300 titles and adds new ones at the rate of 15-25 annually as funds become available for this purpose or as equally fortuitous circumstances allow.

A truly phenomenal rise in requests for health films over the past three years is reported and, as more people learn of the service — as greater skills in the creative use of the health film, among lay and professional leaders alike, are developed — even larger demands can be expected. Especially note-worthy in this direction is a marked trend in physician use of the film library as physician involvement in school health matters increases or physician participation in such citizen groups as the PTA, the local School Board, the local Health Council or Committee develops ever more widely.

But perhaps quite as important an aspect of the film library as the film distribution service is that of its previewing service. Commercial and other sources are usually agreeable to sending copies of their films for purposes of preview provided there is reasonable assurance that the request for these films is backed by firm intent to purchase if the film suits the program needs of the Departmental activities or other associated sources with health-connected functions. If requested far enough in advance to permit of this, films maintained by the Department are always available for evaluation purposes through loan to groups or individuals who are planning programs in which films may well be used to support or augment program objectives.

Some of the films carried in the Department film library which are believed to hold interest to physician groups especially are those described below:

Prevention of Disability from Stroke 16mm Sound Black & White 28 minutes
Stresses the fact that disability from stroke is preventable: the proper care and approved exercise which can be performed to prevent needless crippling.

Life In Your Hands 16mm Sound Black & White 11 minutes (With teaching guide)
Intended primarily to assist the physician in teaching external heart-lung resuscitation to public health agencies, industrial safety and rescue groups.

Identification of Early Syphilis 16mm Sound Color 30 minutes
Stresses the importance of suspecting syphilis in office patients, the necessity of recognizing signs of early syphilis, and need for prompt and effective epidemiology. A major portion of the film is devoted to clinical color slides.

PKU — Preventable Mental Retardation 16mm Sound Color 15 minutes
Demonstrates how mental retardation due to Phenylketonuria, commonly called PKU, can be prevented by early examination and diagnosis of infants 4-6 weeks after birth.

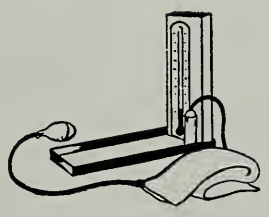
Radiation: Physician and Patient 16mm Sound Color 45 minutes
Depicts the why and what of radiation exposure in diagnostic radiology: an informal discussion about medical radiology by Dr. R. H. Chamberlain, professor of Radiology, U. of Penn. School of Medicine — problems raised; biological effects; physical behavior — its proper use in clinical examination.

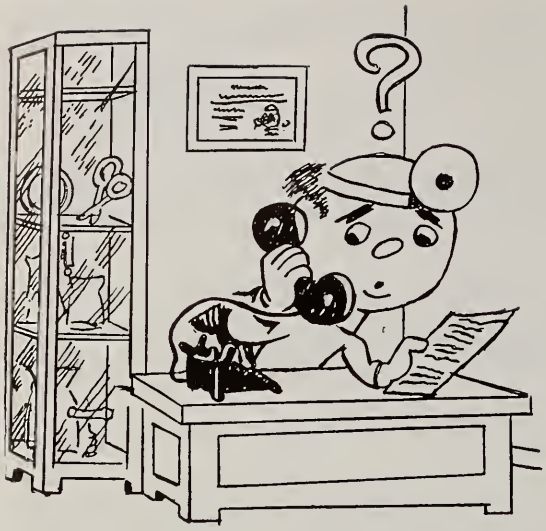
The Child Health Conference 16mm Sound Black & White 30 minutes
Intended primarily for the information of physicians in the promotion of periodical conferences between physician and mothers of children from infancy to school age: explains methods of organizing and conducting community child health conferences.

Management of Breast Feeding 16mm Sound Black & White 15 minutes
Shows natural, unrehearsed demonstrations from real-life situations to reveal in an accurate and authoritative manner some of the problems most frequently encountered and some of the important and helpful techniques by which the nursing mother can be assisted.

Introduction to Speech Problems 16mm Sound Color 30 minutes
Presents a brief review of the incidence, etiology and nature of the various speech difficulties — organic and functional: gives the physician an opportunity to understand how he may be able to prevent a possible permanent speech disorder of the functional type as well as to broaden his concept of many organic diseases where speech defects play a role.

A catalog listing films available through the Department may be obtained upon request to the Office of Health Education, Department of Health and Welfare, State House, Augusta. Films are loaned without charge except for return postage — to any responsible, interested group or individual in the State.





ANSWERING QUESTIONS

Blue Cross-Blue Shield Membership Campaign

The announcement from the Associated Hospital Service of Maine that it intends to intensify its enrollment efforts in a special membership campaign during the first six months of 1963 is welcome news indeed. For any increase in Blue Cross-Blue Shield membership is not only beneficial to Maine physicians and hospitals but is also a valuable contribution towards the preservation of our voluntary health system.

Having served in various positions for the Maine Medical Association, including the presidency, I have from time to time heard physicians ask why they should participate in Blue Shield or why they should give Blue Shield preferential recommendations. As an ex-officio director of the Maine Blue Cross and Blue Shield Board and as a current member of the board of the National Association of Blue Shield Plans, I should like to answer, here in your Journal, these questions and at the same time attempt to persuade you to give Blue Cross and Blue Shield your whole-hearted support during this campaign.

As most of you know, Blue Cross and Blue Shield are the only health organizations in Maine sponsored by hospitals and physicians with representatives of each on their board. They exist not for the stockholders' benefit, but for the benefit of the people of the State of Maine. The non-profit status permits Blue Cross and Blue Shield to return all benefits of income, except the very small amount necessary for reserves and operational expenses, to Maine hospitals and physicians on behalf of their members.

Of perhaps even greater importance, at least to the individual physician and hospital, is a more tangible ingredient called performance; and it is here that the idealism embraced by Blue Cross and Blue Shield is transformed into solid accomplishment. The two most indicative measures of the efficiency of a health care organization are: (1) the percentage of the income or premium dollar which is returned to the organization's members in benefits and (2) the percentage of the income dollar which is used for operational purposes. If we use these as criteria, Blue Cross-Blue Shield has no peer. For only Blue Cross-Blue Shield consistently return a combined average of 90-95 per cent of their income in patient benefits; and only Blue Cross-Blue Shield use less than 6 per cent of their subscription income for all operating expenses.

Blue Cross-Blue Shield currently cover about three-fifths of the people in Maine who have any form of health protection. In 1961, Blue Cross provided its members with more than 9½ million dollars of hospital benefits and Blue Shield paid more than 2½ million dollars to Maine physicians for services furnished to Blue Shield subscribers.

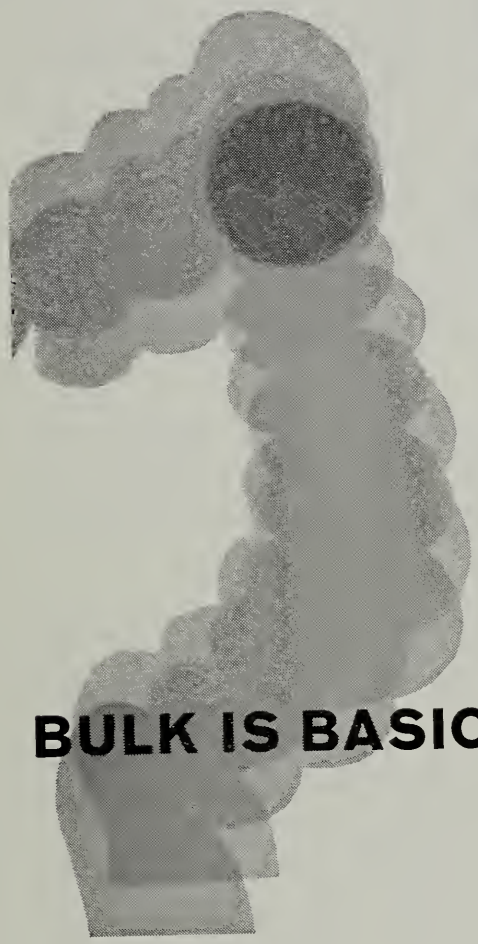
More than 800 of us in the State of Maine and more than 150,000 of us nationally are enrolled in Blue Shield as "participating physicians," but do we all truly "participate"? Do we by "participation" give all-out enthusiastic support of Blue Shield and its companion plan Blue Cross?

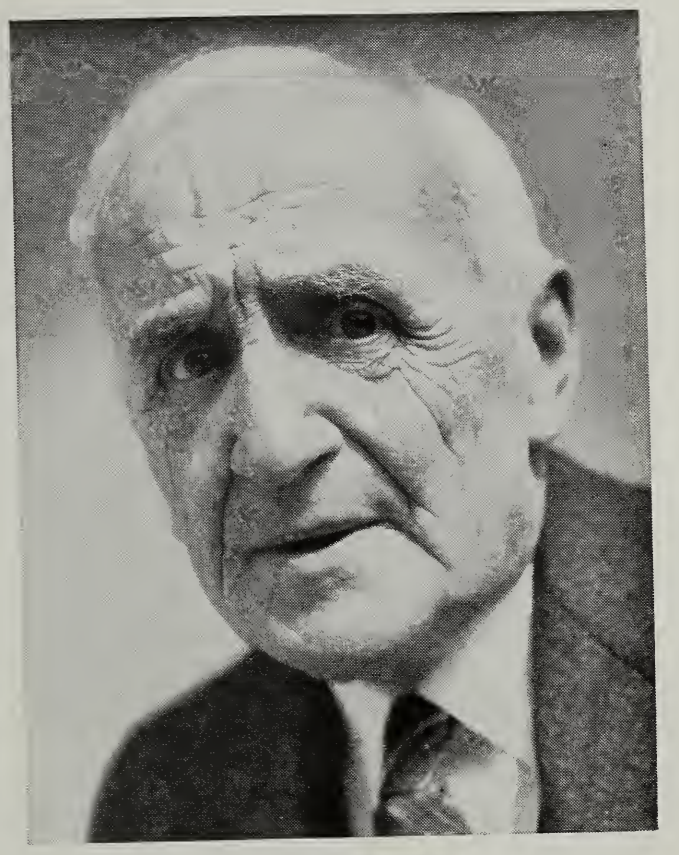
Blue Shield cannot be a "spectator sport" for the American physician. On the contrary, Blue Shield is a physician-participation show, or it's no show at all! For Blue Shield is not a third-party — it's us.

If we are to "participate," we should speak loudly and frequently about the real value of Blue Cross and Blue Shield to both our patients and friends. We should let them know that the Doctors and hospitals have underwritten these plans, and that through this medium, broader health care programs can be provided.

You will be receiving more information from Blue Cross and Blue Shield about this special membership campaign. I hope you will read and heed it because I firmly believe Blue Cross and Blue Shield, with our active support, can do a better job of equalizing the burden of health care expense than any other agency — public or private.

F. A. Winchenbach, M.D.





BULK IS BASIC in geriatric constipation

METAMUCIL®
adds tone to the atonic colon

Metamucil, refined hydrophilic mucilloid, is especially suited to correct the kind of constipation most frequently encountered in elderly patients.

Metamucil adds soft bulk to the often inadequate diets of older persons and supplies the gentle intracolonic pressure needed to induce normal peristaltic action.

This true physiologic stimulus increases muscle tone, encourages normal reflex activity and helps reestablish the natural rhythmic function of the bowel. Only a soft bulk stimulus like Metamucil offers such natural encouragement to normal evacuation.

Metamucil is available as Metamucil powder in 4, 8 and 16 oz. containers and as lemon-flavored Instant Mix Metamucil in cartons containing 16 and 30 single-dose packets.

METAMUCIL®
brand of psyllium hydrophilic mucilloid

G. D. SEARLE & CO.
CHICAGO 80, ILLINOIS
Research in the Service of Medicine

Maine Heart Association Notes

Problems Associated With Longterm Anticoagulant Therapy

"Longterm anticoagulant therapy is being used frequently in the management of certain vascular and thromboembolic diseases. Results predominantly favorable in respect to prolonged survival and decreased morbidity have been reported from use of coumarin anticoagulation in these diseases. However, there has not been adequate evaluation of the ease or difficulty with which a satisfactory and practical program of prolonged anticoagulation can be carried out.

"In 139 cases, 126 patients having occlusive vascular disease were treated with dicumarol. Of particular concern were the problems and limitations which confront the physician managing longterm anticoagulant therapy.

"Fifty-seven percent of these patients had prothrombin times in the therapeutic range during more than 80% of the time they were under treatment. One-third of the cases were marked by hemorrhagic complications which were major in 10% of the total. The incidence of bleeding complications, and especially the major complications, was associated with either an increased incident of arterial hypertension or increased age. Three patients died as a result of hemorrhagic complication that occurred during longterm anticoagulant therapy. Sixty-nine percent of the bleeding episodes occurred when the prothrombin activity was within the therapeutic range.

"Sixteen percent of the patients discontinued anticoagulant therapy. Eleven of the 64 patients who stopped therapy and could be traced had recurrent vascular or thromboembolic episodes within two months.

"In view of the limitations in the practical management of patients on longterm anticoagulant therapy plus the inconvenience, expense, and risks involved, the physician is compelled to appraise carefully the indications for such treatment in each patient before undertaking its use."

(Pollard, J. W., et al, *Circulation*, Volume 25, page 311, 1962)

County Society Notes

KNOX

December 4, 1962

A meeting of the Knox County Medical Society was held at the Knights of Columbus Hall in Rockland, Maine on December 4, 1962. Following the social hour and dinner, the annual business meeting and election of officers was held.

The nominating committee consisting of Robert H. Eddy, M.D. and Wesley N. Wasgatt, M.D. presented the following slate of officers who were elected for the ensuing year:

President, William A. McLellan, M.D., Camden
Vice-President, John A. Root, M.D., Rockland
Secretary-Treasurer, Henry O. White, M.D., Rockland
Delegates to the Maine Medical Association House of Delegates: Harry G. Tounge, Jr., M.D., Camden and Albert L. Hunter, M.D., Rockland. Alternate: Johan Brouwer, M.D., Rockland
Board of Censors: Paul A. Millington, M.D., Camden (3 yrs.); David V. Mann, M.D., Rockland (2 yrs.) and John A. Root, M.D., Rockland (1 yr.)

The county dues were raised to $15.00 to cover the increased expense of the Society's activities.

MUSTAFA V. ONAT, M.D.
Secretary

KENNEBEC

December 13, 1962

The annual meeting of the Kennebec County Medical Association was held at the Augusta State Hospital in Augusta, Maine on December 13, 1962.

The following officers were elected for 1963:

President, Brinton T. Darlington, M.D., Augusta
Vice-President, George J. Robertson, M.D., Waterville
Secretary-Treasurer, Earle M. Davis, M.D., Waterville
Delegates to the Maine Medical Association House of Delegates: Anthony E. Lepore, M.D., Gardiner; Francis J. O'Connor, M.D., Augusta; Paul H. Pfeiffer, M.D., Earle M. Davis, M.D. and Loring W. Pratt, M.D., all of Waterville, Alternates: John D. Denison, M.D., Gardiner; Lane Giddings, M.D., and Napoleon J. Gingras, M.D., both of Augusta; Kenneth W. Sewall, M.D. and Samson Fisher, M.D., both of Waterville
Councilors: John D. Denison, M.D., Gardiner; Allan J. Stinchfield, M.D., Augusta and Robert L. Ohler, M.D., Togus
Grievance Committee: Hugh J. Mathews, Jr., M.D., Gardiner; John F. Reynolds, M.D., Waterville and Oakley A. Melendy, M.D., Augusta
Man Power Procurement and Civil Defense: Allan J. Stinchfield, M.D., Augusta; Frank B. Bull, M.D., Gardiner and Albert A. Poulin, M.D., Waterville

Drs. Theodore M. Russell and M. Rafiq Jan, both of Augusta, were elected to membership.

Leon D. Herring, M.D. of Winthrop introduced a resolution of gratitude to Francis H. Sleeper, M.D. who retired on January 14, 1963 as Superintendent of the Augusta State Hospital.

Annual reports of the secretary, treasurer and the president were read. It was voted by the Association to instruct the Delegates for 1963 to oppose the "Bidwell Report" but to open the way for further discussion in seeking a more equitable distribution of representation in the Maine Medical Association.

The clinical program was presented by Robert L. Ohler, M.D. of Togus in which he discussed the indication and technique of the artificial kidney as well as the basic physiology involved. He also reported on the use of the artificial kidney at the Veterans Administration Center at Togus.

January 17, 1963

A meeting of the Kennebec County Medical Association was held at the Pioneer House in Augusta, Maine on January 17, 1963.

Richard H. Dennis, M.D. of Waterville was elected as Delegate to the Maine Medical Association House of Delegates.

A letter from George L. Maltby, M.D., chairman of the Medical Advisory Committee to the Bureau of Motor Vehicles for the State of Maine, was read to the Association. This was in regard to physicians reporting medically unsafe drivers to an appropriate State Agency in preventing accidents caused by medical factors such as epilepsy, syncope, etc. It was voted that physician's cooperation with such a program is necessary and that the proper type of reporting should be investigated.

An announcement was made that the Woman's Auxiliary of the Kennebec County Medical Association will hold a benefit for the Nurse's Scholarship Fund on Saturday evening, March 9th. Final plans and formal invitations will be issued at a later date.

The clinical portion of the meeting was presented by Irving L. Selvage, Jr., M.D. Associate Radiologist at the Maine Medical Center in Portland. He discussed "Arteriography" and illustrated his interesting discussion with several angiographs, clearly demonstrating the normal and pathologic conditions.

EARLE M. DAVIS, M.D.
Secretary

ANDROSCOGGIN

December 20, 1962

The annual meeting of the corporators of the Androscoggin County Medical Association was held at the Central Maine General Hospital on December 20, 1962.

The meeting was called to order by the President, George B. O'Connell, M.D. Otis B. Tibbetts, M.D., chairman, presented the Financial Committee's Report and pointed out that no investments had been made in the past two years. His report was accepted and approved. The Treasurer's Report was read and approved.

Gilbert R. Grimes, M.D. of Lewiston was elected to membership.

Charles W. Steele, M.D. reported the findings of the committee concerning the Health and Welfare form (PA17) and explained the recommendations. It was moved and voted that these recommendations be brought to the attention of Dr. Fisher and other high echelon officials concerned.

Paul J. LaFlamme, M.D., chairman of the Nominating Committee, submitted the following slate of officers who were elected for the coming year:

President, Morris E. Goldman, M.D., Lewiston
Vice-President, Robert D. Wakefield, M.D., Lewiston
Secretary-Treasurer, Donald L. Anderson, M.D., Lewiston
Delegate to the Maine Medical Association House of Delegates: George B. O'Connell, M.D., Lewiston (3 yrs.). Alternate: Frederick B. Lidstone, M.D., Auburn (3 yrs.)
Councilor: Norman O. Gauvreau, M.D.

The meeting was turned over to the new President, Morris E. Goldman, M.D.

A committee consisting of Drs. Robert D. Wakefield, Charles F. Branch, Ralph A. Goodwin, Jr., Otis B. Tibbetts and Harvey J. Proulx was appointed to formulate an autopsy permit which would grant authority to remove suitable eyes for the eye bank.

DONALD L. ANDERSON, M.D.
Secretary

YORK

January 9, 1963

Twenty-five members and four guests attended the annual meeting of the York County Medical Society which was held at the Goodall Hospital in Sanford, Maine on January 9, 1963.

Carl E. Richards, M.D., read the report of the Nominating Committee and the following officers were elected for 1963:

President, James S. Johnston, M.D., York Harbor
Vice-President, Roger J. P. Robert, M.D., Saco
Secretary-Treasurer, Charles W. Kinghorn, M.D., Kittery
Delegates to the Maine Medical Association House of Delegates: Robert F. Ficker, M.D., Kennebunkport; Roger J. P. Robert, M.D., Saco and Carl E. Richards, M.D., Sanford. Alternates: Melvin Bacon, M.D. and Stephen A. Cobb, M.D., both of Sanford and Kenneth E. Leigh, M.D., York
Censors: Stephen A. Cobb, M.D., Sanford; Willard H. Bunker, M.D., York Harbor and Paul S. Hill, Jr., M.D., Saco
Executive Committee: James S. Johnston, M.D., York Harbor; Roger J. P. Robert, M.D. and Paul S. Hill, Jr., M.D., both of Saco; Melvin Bacon, M.D. and Carl E. Richards, M.D., both of Sanford

Thomas A. Martin, M.D., Councilor for the First District, gave a very fine talk covering his duties as councilor.

Drs. John P. Lannin of Sanford and John J. Lorentz of Kennebunkport were elected to membership in the society.

CHARLES W. KINGHORN, M.D.
Secretary

LINCOLN-SAGADAHOC

January 15, 1963

The regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on January 15, 1963.

The Nominating Committee proposed a slate of officers who were elected for the coming year:

President, Ralph C. Powell, M.D., Damariscotta
Vice-President, Edward L. Kinder, Jr., M.D., Bath
Secretary-Treasurer, George W. Bostwick, M.D., Newcastle
Delegates to the Maine Medical Association House of Delegates: Ralph C. Powell, M.D., Damariscotta and John F. Andrews, M.D., Boothbay Harbor. Alternates: Mary J. Tracy, M.D., Damariscotta and Miriam Doble, M.D., Bath
Censors: Samuel L. Belknap, M.D., Damariscotta; John F. Dougherty, M.D., Bath and Virginia C. Hamilton, M.D., South Harpswell

GEORGE W. BOSTWICK, M.D.
Secretary

PENOBSCOT

January 15, 1963

Fifty-five members and guests attended the monthly meeting of the Penobscot County Medical Society which was held on January 15, 1963 at the Bangor House in Bangor, Maine. The President, Allison K. Hill, M.D., presided. The Hancock and Piscataquis county societies were invited to participate in the meeting.

The speaker of the evening was Dr. George E. Esher of the Sloan-Kettering Institute and Cornell Medical School. He gave a stimulating talk on the Chemotherapy of Cancer. He discussed the various agents now available for the medical management of cancer, the method of using them, their side effects and the drugs of choice in different types of cancer. His appearance was sponsored by the Maine Cancer Society.

At the business meeting it was voted that the society go on record as favoring some method of reporting medically unsafe automobile drivers and to so inform the chairman of the Medical Advisory Committee to the Bureau of Motor Vehicles.

An announcement was read from the AMA urging the members to vaccinate all patients for smallpox that have never been vaccinated and to re-vaccinate those who need it.

It was announced that the January polio clinic for county residents at which type 3 oral vaccine was to be given had been cancelled. It is hoped this will be held later in the year.

Martyn A. Vickers, M.D., a member of the State of Maine Board of Registration of Medicine, discussed some of the duties of the Board.

FREDERICK C. EMERY, M.D.
Secretary

FRANKLIN

January 16, 1963

The biannual meeting of the Franklin County Medical Society was held at the Hotel Herbert in Kingfield, Maine on January 16, 1963.

The following officers were elected for 1963:

President, Stanley B. Covert, M.D., Kingfield
Vice-President, Hays G. Bowne, M.D., Farmington
Secretary-Treasurer, Philip B. Chase, M.D., Farmington
Delegate to the Maine Medical Association House of Delegates: Paul E. Floyd, M.D., Farmington. Alternate: Wallace H. Duffy, M.D., Farmington
Censor: James W. Reed, M.D., Farmington

W. Dean Pope, M.D. of Rangeley was elected to membership in the society.

The guest speakers, Edward M. Southern, M.D. of Waterville and Anthony Betts, M.D. of Brunswick, spoke on "State Medicine in Practice in Britain."

PHILIP B. CHASE, M.D.
Secretary

New Members

ANDROSCOGGIN

Richard N. Goldman, M.D., 185 Webster Street, Lewiston
Theodore H. Sanford, M.D., 117 Goff Street, Auburn
Richard W. Turcotte, M.D., 70 Pine Street, Lewiston

CUMBERLAND

Michael D. Ballard, M.D., 679 Forest Avenue, Portland

HANCOCK

Frank S. Cruickshank, Jr., M.D., 22 Forest Street, Bar Harbor

KENNEBEC

M. Rafiq Jan, M.D., Box 724, State Hospital, Augusta
Theodore M. Russell, M.D., 21 Western Avenue, Augusta

LINCOLN-SAGADAHOC

Fuller G. Sherman, M.D., Spruce Point, Boothbay Harbor

Necrologies

HENRY P. JOHNSON, M.D.
1889 - 1962

Henry P. Johnson, M.D. of Portland, Maine died on September 18, 1962. He was born in Stetson, Maine on July 21, 1889, son of Henry F. and Rebecca A. G. Johnson. He graduated from Maine Central Institute and Bates College receiving his medical degree from Bowdoin Medical School in 1921.

Dr. Johnson practiced medicine in Rumford, Maine from 1921 to 1924. He specialized in ear, nose and throat surgery at the Mayo Clinic in Rochester, Minnesota from 1924 to 1927 when he returned to Portland, Maine to begin practice as a specialist in Otolaryngology.

Dr. Johnson was a member of the Maine Medical Association, Cumberland County Medical Society and the American Medical Association. He was also a member and past president of the Eastern Section of American Laryngological, Rhinological and Otological Society, member of the New England Oto-Laryngological Society, Portland Medical Club, American College of Surgeons, American Academy of Ophthalmology and Otholaryngology and American Hearing Society. Dr. Johnson was a member of the First Universalist Church, Portland; Bates College Club in Portland; Portland Club; Pacific Lodge of Exeter; Rumford Royal Arch Chapter; 32nd Degree Scottish Rite, Valley of Portland; Strathglass Commandery, Knights Templar of Rumford; Kora Temple Shrine, Lewiston and Kora Shrine Club, Portland.

Surviving are his widow, the former Hazel M. MacGregor; two daughters, Mrs. William J. Smart, Quincy, Massachusetts and Mrs. Edward P. Perry, Mystic, Connecticut; a son, James P. Johnson, Kennebunk; eight grandchildren; a sister, Mrs. Fred Hutchinson, Bangor; a brother, Aaron C. Johnson, Bangor and a nephew.

OWEN B. HEAD, M.D.
1877 - 1962

Owen B. Head, M.D., of Sanford, Maine died on September 29, 1962. He was born in Denmark, Maine on September 12, 1877, son of James A. and Mary A. B. Head. Dr. Head was a graduate of Denmark High School and received his medical degree from Bowdoin Medical School in 1900. Dr. Head began the practice of medicine in New Sharon, Maine and in 1920 moved to Sanford, Maine where he practiced until his death.

Dr. Head was an Honorary member of the Maine Medical Association and the York County Medical Society, having received a 50-year medal in 1950, a 55-year pin in 1955 and a 60-year pin in 1960. He was also a member of the American Medical Association, past president of the Sanford Kiwanis Club, a member of the New Sharon Lodge of Masons and the North Parish Congregational Church.

Surviving are his widow the former Mae Clark; a daughter, Mrs. Irving G. MacFarland of Sanford and two grandsons.

MARIBEL H. WALKER, M.D.
1878 - 1962

Maribel H. Walker, M.D. of Cape Elizabeth, Maine died on October 10, 1962. She was born in Portland, Maine on March 30, 1878, daughter of Dr. Erastus E. and Mary Dyer Holt. She attended Bellows School in Portland, graduated from Smith College and received her medical degree from Tufts College Medical School in 1904.

Dr. Walker practiced medicine in the late 1920's and 1930's in Portland specializing in ear ailments. She was a former member of the Maine Medical Association and the Cumberland County Medical Society.

Surviving are her husband, Leon V. Walker; two sons, Winthrop B., Lincoln, Massachusetts and Leon V., Jr., Mt. Vernon; a daughter, Mrs. Frederick W. P. Lorenzen, Stamford, Connecticut; two brothers, Roscoe T. Holt, Cape Elizabeth and Benjamin D. Holt, Falmouth Foreside; six grandchildren and two great-grandchildren.

MAURICE A. PRIEST, M.D.
1883 - 1962

Maurice A. Priest, M.D. of De Land, Florida died on October 14, 1962. He was born in Dummer, New Hampshire on July 25, 1883, son of William H. and Ella A. Priest.

Dr. Priest graduated from Coburn Classical Institute, Colby College and received his medical degree from Bowdoin Medical School in 1907. He practiced medicine in Fairfield, Maine from 1907 to 1914 and Augusta, Maine from 1914 until his retirement in 1953 when he moved to Florida.

Dr. Priest was an Honorary member of the Maine Medical Association and Kennebec County Medical Association, having received a 50-year medal in 1957 and a 55-year pin in 1962. He was also a member of the American Medical Association and St. Mark's Episcopal Church, Augusta.

Surviving are his widow, Effie Grover Priest, De Land, Florida and a daughter, Mrs. Eleanor P. Russell of Miami, Florida.

EDWARD S. CALDERWOOD, M.D.
1878 - 1962

Edward S. Calderwood, M.D. died suddenly at Searsport, Maine on October 27, 1962. He was born in Waldoboro, Maine on November 10, 1878.

Dr. Calderwood graduated from Roxbury Latin School in 1897 and received his medical degree from Boston University in 1904. He was a member of the American Medical Association, Massachusetts Medical Society, Homeopathic Medical Society, Boston Medical Library, Fellow of American College of Physicians and Diplomate of American College of Physicians. He retired from active practice in 1957 to enjoy retirement in Searsport.

He is survived by his widow, Hope Curtis Calderwood of Searsport; two sons, Samuel H. Calderwood of Bangor and George C. Calderwood, M.D. of San Francisco, California; six grandchildren and two great-grandchildren.

JAMES B. MORRISON, M.D.
1891 - 1962

James B. Morrison, M.D. of Ashland, Maine died on October 29, 1962. He was born in Milltown, New Brunswick, Canada on November 21, 1891, son of Oran D. and Adeline G. Morrison. He graduated from Milltown High School in 1909 and received his medical degree from Baltimore Medical College in 1913. During World War I, he served in the Canadian Army as a captain.

Dr. Morrison practiced medicine in Maine for over 40 years and had been located in Ashland since 1953.

He was a member of the Maine Medical Association, Aroostook County Medical Society and American Medical Association.

JOHN A. GREENE, M.D.
1881 - 1962

John A. Greene, M.D. of Rumford, Maine died on November 17, 1962. He was born in Coplin, Maine on September 7, 1881, son of Isaac W. and Mary J. Greene. He was a graduate of Farmington High School, Bowdoin College in 1903 and received his medical degree from Bowdoin Medical School in 1908.

Dr. Greene was an Honorary member of the Maine Medical Association and the Oxford County Medical Society, having received a 50-year medal in 1958. He was also a member of the American Medical Association, Rumford Community Hospital staff, local Rotary Club, Blazing Star Lodge, AF & AM, Royal Arch Chapter, Strathglass Commandery, Knights Templar and the Rumford Methodist Church. Dr. Greene was a medical examiner for Oxford County for many years.

Surviving are his widow, Mrs. Elizabeth Pettengill Greene; a son, John P. Greene, M.D. of Auburn, Maine and six grandchildren.

JOHN R. HAMEL, M.D.
1892 - 1963

John R. Hamel, M.D. of Portland, Maine died on January 2, 1963, after a long illness.

Dr. Hamel was born in Portland, Maine on April 12, 1892, son of John Henry and Laura Bourke Hamel. He graduated from Bowdoin College in 1915 and received his medical degree from Bowdoin Medical School in 1918. He was a veteran of World War I, serving in the U.S. Army as a lieutenant. He interned at the Maine General Hospital and practiced in Portland until September of 1962.

Dr. Hamel established the staff at the Portland City Hospital and was on the staff of the Maine Medical Center and Mercy Hospital.

He was a member of the Maine Medical Association, Cumberland County Medical Society, American Medical Association and past president of the Portland Medical Club. He was also a member of the Harold T. Andrews Post, AL; Portland Lodge, AF & AM; Greenleaf Chapter, RAM; St. Alban's Commandery, Knights Templar; 32nd Degree Scottish Rite, Valley of Portland; Portland Council; Knights of the Red Cross of Constantine and a communicant of the Episcopal Church.

He is survived by his widow, the former Belle McIntosh; two daughters, Mrs. Robert M. Baker of Anderson, Indiana and Mrs. Richard K. Kingsbury, Greensboro, North Carolina and five grandchildren.

News, Notes and Announcements

Maine Doctors Win National Honors

Five Maine physicians have been honored by the American College of Physicians, an international organization representing the specialty of internal medicine.

Charles A. Hannigan, M.D. of Auburn has been designated a Fellow of the college. Elected as Associates were: Craig W. Morris, M.D., Augusta; Edward B. Babcock, M.D. and George W. Wood, III, M.D., Brewer; and Paul J. LaFlamme, M.D., Lewiston.

The Fellowship honors will be formally bestowed April 4, 1963 in Denver, Colorado at the convocation ceremonies to be held in conjunction with the 44th Annual Session of the American College of Physicians.

Dr. Aranson Appointed Chief of Medicine at M.M.C.

Albert Aranson, M.D. has been appointed chief of internal medicine at the Maine Medical Center in Portland, Maine.

Dr. Aranson came to Portland in 1948 and was elected to the courtesy staff of the Medical Center the following year. He became a junior physician in 1952, an associate physician in 1955 and a senior physician in 1959.

Dr. Aranson received his certification by the American Board of Internal Medicine in November 1951 and is a Fellow of the American College of Physicians. He is currently secretary-treasurer of the Cumberland County Medical Association and serves as a consultant in medicine at the Veterans Administration Hospital in Togus.

Dr. Pratt to Attend Course in Nasal Surgery

Loring W. Pratt, M.D. of Waterville, Maine has been appointed as a member of the instructor staff at the course on "Expanded Surgery of the Nasal Septum and Closely Related Structures" which is to be presented at the Medical College of Virginia, Richmond, April 28 - May 1, 1963.

American Heart Association Honors Bangor Physician

The American Heart Association announced the appointment of Wilbur B. Manter, M.D. of Bangor as a member of the national committee for professional education for a three year period.

Dr. Manter is President of the Maine Heart Association and was recently chairman of the professional education committee of Maine Heart Association.

The national professional education committee is made up of cardiac specialists from every section of the country and is instrumental in bringing latest developments in cardiovascular therapy to the nations physicians, hospitals and to the nursing profession.

Dr. Stinchfield Demonstrates New Treatment to M.D.'s

Allan J. Stinchfield, M.D. presented an exhibit at a meeting of the American Academy of Orthopedic Surgeons which

was held in Miami, Florida recently. The exhibit showed that Osgood-Schlatter's Disease, which could hamper a child's mobility for years, can now be successfully treated in 10 days to two weeks by use of a cortisone derivative.

This is the second successive year that Dr. Stinchfield has been invited to exhibit at the convention.

Dr. Zolov Represents B'nai B'rith Group in D.C.

Benjamin Zolov, M.D. of Portland, Maine, chairman of the Maine State Council, Anti-Defamation League of B'nai B'rith represented the council and the local Cumberland Lodge and Chapter, at the 50th anniversary program of the league in Washington, D.C. on January 31, 1963.

During the program, which was televised nationally, President John F. Kennedy was presented the league's 1963 America's Democratic Legacy Award.

Maine Thoracic Society Elections

Louis N. Fishman, M.D. of Lewiston was elected President of the Maine Thoracic Society at its recent annual meeting. Also elected were H. Richard Hornberger, M.D. of Waterville, Vice-president and Stanley B. Covert, M.D. of Kingfield, Secretary.

A special committee of the Maine Thoracic Society led by Clement A. Hiebert, M.D. of Portland is making a special study on program work in the respiratory disease field for the Maine Tuberculosis and Health Association which the Society serves in a medical advisory capacity.

Clinical Hypnosis Course

A basic course in Clinical Hypnosis, which is co-sponsored by the Oral Surgery Department at Boston City Hospital and the New England Society of Clinical Hypnosis, will be held at the Boston City Hospital on March 8, 9 and 10, 1963.

The Faculty includes: David Cheek, M.D., San Francisco, California; Donald Coulton, M.D., Bangor, Maine; Donald Hutchins, M.D., Bath, New York; Harold Colan, D.M.D.; Lawrence Staples, D.M.D.; John B. Sturrock, M.D.; all of Boston, Massachusetts and others.

Eligibility is limited to members of AMA, ADA and APA. Tuition: Non-members $100.00; members $65.00.

For further information inquire: Dr. Lawrence M. Staples, 311 Commonwealth Avenue, Boston, Massachusetts.

Central Maine General Hospital Lewiston, Maine Refresher Course in Pulmonary Diseases

March 6, 1963 — *Diagnostic Aspects of Sputum Examination*
SANFORD CHODOSH, M.D.
Assistant Professor of Medicine, Tufts University School of Medicine; Research Associate, Lung Station (Tufts), Boston City Hospital

March 13, 1963 — *The Present Status of Lung Surgery*
(Indications and Contraindications)
RALPH A. DETERLING, JR., M.D.
Professor of Surgery, Director of the Department of Surgery, Tufts University School of Medicine

March 20, 1963 — *The Use of Antibiotics in Pulmonary Diseases*
LOUIS WEINSTEIN, M.D.
Professor of Medicine, Tufts University School of Medicine

March 27, 1963 — *Evaluation of Cardiopulmonary Function*
MAURICIO J. DULFANO. M.D.
Assistant Professor of Medicine, Tufts University School of Medicine; Research Associate, Lung Station (Tufts), Boston City Hospital

April 10, 1963 — *The Management of Chronic Pulmonary Diseases*
MAURICE S. SEGAL, M.D.
Clinical Professor of Medicine, Tufts University School of Medicine; Director, Lung Station (Tufts), Boston City Hospital

April 17, 1963 — *Inhalation Therapy*
NORMAN TRAVERSE, M.D.
Clinical Associate, Lung Station (Tufts), Boston City Hospital

This course will total 15 hours and is designed to be of value to all practicing physicians. A certification for 15 hours postgraduate medical education will be given on completion of the course. Application has been granted by the American Academy of General Practice for credit under Category 1.

All lectures will be held in Hiebert Hall at the Central Maine General Hospital from 3:30 to 6:30 P.M.

Fee, $30.00. Checks should be made payable to C. M. G. Hospital.

The Physicians Musical Society of America

OBJECTIVE: To perform Classical Symphonic, Chamber and Choral Music under the direction of Leading Conductors, and to promote fellowship among participating physicians and their families.

OPEN TO: Physicians and their immediate family.

TIME: To be determined by questionnaire. (See below)

Please complete the following if you are interested:

Name:

Address

List separately for each member the musical instrument played, or vocal range.

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List the three most available months, in order of preference:

1.

2.

3.

Send reply to: *Doctors' Musical Society,* c/o Department of Pediatrics, 1025 Walnut Street, Philadelphia 7, Pennsylvania

Maine Thoracic Society and Androscoggin County Medical Association Meeting

A combined meeting of the Maine Thoracic Society and the Androscoggin County Medical Association will meet at the St. Mary's General Hospital in Lewiston, Maine on February 27, 1963 from 2:00 to 4:30 p.m.

Wilford B. Neptune, M.D. of Boston, Massachusetts will speak on "Cardiovascular Surgery." A panel discussion will follow on Chronic Bronchial Asthma and Emphysema.

A social hour and dinner will follow the meeting.

Course in Nasal Surgery

An introductory course in "Expanded Surgery of the Nasal Septum and Closely Related Structures" will be presented at the Medical College of Virginia, Richmond, April 28- May 1, 1963.

The course will consist of lectures, laboratory and surgical demonstrations emphasizing primarily the maxilla-premaxilla approach to nasal septum surgery, examination and diagnosis of nasal form and function, variations of septum operations, medial and lateral osteotomies, mobilizing and modifying the nasal pyramid, treatment of nasal fractures, repair of septum perforations, and surgical management of nasal atrophy, atrophic rhinitis, ozena (endonasal microplasty).

The program will be under the sponsorship of the Department of Otolarynogology with the cooperation of the American Rhinologic Society.

A preliminary program or other information may be obtained from Dr. Kinloch Nelson, director, continuation education program, Medical College of Virginia, 1200 East Broad Street, Richmond, or American Rhinologic Society, 530 Hawthorne Place, Chicago.

Third Connecticut Postgraduate Anesthesia Seminar

"pH, Acid-Base and Metabolic Problems in Anesthesia" will be the theme of the Third Connecticut Postgraduate Anesthesia Seminar to be presented by the Connecticut State Society of Anesthesiologists at the Hunt Memorial, 230 Scarborough Street, Hartford, Connecticut on Friday, May 10 and Saturday, May 11, 1963.

For further information write: Committee on Postgraduate Education, Connecticut State Society of Anesthesiologists, c/o Dr. David M. Little, Jr., 125 Walbridge Road, West Hartford 7, Connecticut.

Department of Health and Welfare Division of Maternal and Child Health Including Services for Crippled Children

(By Appointment Only)

Cardiac Clinics

Bangor — Eastern Maine General Hospital
9:00 a.m.: Mar. 8-22

Portland — Maine Medical Center
9:00 a.m.: Every Friday (holidays excepted)

Adolescent Clinics

Portland — Maine Medical Center
1:00 p.m.: Feb. 27, Mar. 27

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Physicians' Observations In Nursing Homes

Jacob M. Jackler, M.D., Paul H. Pfeiffer, M.D., Ovid F. Pomerleau, M.D.,
Vaughn R. Sturtevant, M.D., Lucien F. Veilleux, M.D. and Harold N. Willard, M.D.*

Introduction

There is a growing body of literature on the quality of care in nursing homes. However, no article has been written by practicing physicians on which they express their opinions based on actual experience.

Under a grant from the Office of Vocational Rehabilitation, a program for evaluating patients in nursing homes has been going on at the Thayer Hospital since July of 1959.

This experience has shown that changes are needed, and that the Maine Department of Health and Welfare, and the Maine Association of Nursing Homes are attempting to effect changes. The medical profession has not become interested in this problem, and yet their leadership is vital if effective methods are to be found to improve nursing home care. Every patient in a nursing home in Maine — whether private or financed by a state or community agency — has a physician who is responsible for his care. Bearing this responsibility, the medical profession knows best which of the patient's needs are met or unmet in nursing homes, and can be a valuable source of leadership in planning for improved care.

The problem was discussed with the House of Delegates of the Maine Medical Association at their meeting in June of 1961. A resolution was passed approving a six-month pilot project in the Waterville area.

Dr. Dean H. Fisher, Commissioner of Health and Welfare for the State of Maine was brought in on the planning. He gave enthusiastic support and provided funds for regular doctor's rounds in nursing homes.

The Purpose Of This Project

To observe the clinical needs of patients in nursing homes.

To observe problems of nursing home administrators.

To make recommendations for improvement of nursing home care.

Methods And Material

Six nursing homes in the Waterville area agreed to participate in the project. Ten physicians volunteered to carry out the observations and six doctors were finally selected.

At one planning session a lawyer for the Maine Medical Association outlined the medico-legal considerations. To avoid legal entanglements, he suggested that the physician-observer be employed as a consultant to the nursing home administrator. This would clarify the point that the physician-observer had no responsibility for the individual patients, who would remain under the care of their own physicians.

A permission form was developed, to be signed by the patient, and the private physician before any patient was included in the project.

The physician-observer acquainted himself with the clinical problems of all patients in the nursing home assigned to him. He did this by review of records, or interviews, or complete history and physical examination at his own discretion.

Any suggestions for further study or change in

*From Thayer Hospital, Waterville, Maine.

This project was supported in part by the Office of Vocational Rehabilitation, Grant #447 and in part by the Maine Department of Health and Welfare.

therapy were given to the nursing home administrator. It was her responsibility to see that the patient's physician was made aware of these suggestions.

The physician-observer also acquainted himself with the problems faced by the nursing home administrator. About half his time was spent in discussions with the administrator and the personnel.

Visits were scheduled at weekly intervals at first. In homes with twelve or less beds, the physician spent one hour each visit. In homes of more than twelve beds, two hours were scheduled. The largest home had twenty-nine beds.

Once a month, instead of visiting the nursing home, the physicians would meet for a one hour discussion and review of the project.

The final report was presented to the House of Delegates of the Maine Medical Association in June, 1962.

The project ran for six months — from the middle of November 1961 through the middle of April 1962. After the midpoint of the project, visits were scheduled at three and four week intervals.

Clinical Findings

What can a physician do from a clinical point of view about patients in nursing homes? In planning sessions, it was decided that he could do the following:

Establish or confirm the diagnosis.

Note whether or not treatment being received is appropriate.

Observe the frequency with which significant episodes of illness occur in a nursing home population, and whether they were reported to the physician.

Look for patients who could be benefited by a short period of hospitalization for diagnostic tests, or for intensive treatment, or for intensive rehabilitation.

Evaluate rehabilitation potential of patients.

Table I summarizes these observations. It leaves little doubt that there is a need for more careful clinical supervision of patients in nursing homes.

TABLE I

Summary Of Clinical Findings

	Patients	*% of Total*
Number of Patients seen	81	100%
Change in Diagnosis	12	15%
Clinical Episodes not Reported	15	19%
Need for Hospitalization	21	25%
Hospitalization arranged	16	19%
Hospitalization not arranged	5	6%
Change of Treatment	21	25%
Unrecognized Rehabilitation Potential	12	15%

A few examples will emphasize the importance of these findings. *Change in Diagnosis*: One of these patients was at the nursing home for terminal care with a diagnosis of cancer of the nose. Biopsy showed only benign nasal polyps. This patient had been in the nursing home two years.

TABLE II

Comparison Of Clinical Findings In Two Nursing Homes

	Nursing Home #1	*Nursing Home #2*
Number of Patients seen	24	30
Change in Diagnosis	4	8
Change in Treatment	4	11
Clinical Episodes not Reported	1	13
Need for Hospitalization	5	12
Hospitalization arranged	4	8
Hospitalization not arranged	1	4
New Rehabilitation Potential	1	5

Clinical Episodes not Reported: A patient developed chest pains and vomiting. The nursing home administrator did not call the doctor but treated her with laxatives. The patient died in two days of a coronary occlusion.

Need for Hospitalization: A patient was bedbound in a nursing home for two years following a stroke. He was hospitalized for intensive rehabilitation and is now ambulatory with a brace.

Change of Treatment: A patient with mental confusion was receiving nine different drugs. When all the drugs were cancelled except digitalis, the confusion cleared.

The need varies with the nursing home. In Table II, two nursing homes of approximately the same size are compared. In Nursing Home #2, there was a larger number of patients with incorrect admission diagnosis, inappropriate therapy, and with need for hospitalization. The number of significant clinical episodes which occurred and were not reported to the responsible physician is strikingly different in the two homes. This table makes it clear that the quality of care in a nursing home depends on both the physician and the nursing home administrator, and when there is lack of interest on the part of one, there is also lack of interest in the other.

Observations Of The Nursing Home Itself

Each home was observed to do a particular type of care well. One home gave excellent convalescent care and active rehabilitation, but handled patients with emotional problems poorly. Another prided itself in dealing with the mentally confused patients, but did not do active physical rehabilitation. Most were giving adequate care for the bedbound patient, but all had a number of patients who could be in boarding homes.

One physician said the best thing that could be done with the nursing homes to which he was assigned was to close it. However, he admitted his patients to this home in spite of this opinion. The reason given was that there was no alternative for most of them.

Observations Made By The Physicians Concerning Their Own Attitudes Following The Project

"I couldn't get interested. All a doctor can do clinically is to postpone death. The main needs are social and

economic, and I can't arrange for more attentive families, more money, or more hobbies."

"I can't feel as much responsibility for state patients as I do for private parties."

"It was interesting for the first few visits. Then there was nothing more to contribute. I was glad when the project was over."

"I wasn't bored. Each visit strengthened my previous convictions. However, the problems seem too difficult to solve."

"It is not a pleasant task to work with patients who are so unstimulating and so unresourceful as those who are rejected by their own families."

Discussion

From these observations, we are convinced that improved clinical care would not only be a significant help to individual patients in nursing homes, but would also be a great stimulus to nursing home administrators. The most evident need for improved clinical care is a careful evaluation of patients before they are admitted to the nursing home. Once a patient is admitted to a nursing home, he is liable to remain there. Our observations show that at least 50% of patients in nursing homes need neither skilled nursing care or complicated medical procedures. They could have been cared for as well or better in their own homes, if the family wanted them, or in boarding homes.

Re-evaluations of patients should be done periodically.

On admission, the physician should prescribe the expected length of stay in the nursing home, just as he prescribes the length of use of any powerful drug. It is also the physician's responsibility to let the nursing home administrator know whether the patient is admitted for convalescence, rehabilitation or long term custodial care. Without the prescription of "dosage," proper continuity of care cannot be expected.

In addition to evaluations, our observations show an urgent need for more careful clinical supervision of patients in nursing homes. The possibility of having a physician assigned to cover nursing homes in his district was discussed. However, it is difficult to see how such a position could be set up realistically. Even if salary for such a position were provided by the State Department of Health and Welfare, none of the observers could visualize a really good physician taking such a job. Therefore, it can only be recommended that the physician admitting the patient assume the responsibility for close continuity of care.

Totally inadequate charting is presently one of the chief obstacles to good patient care in nursing homes. We collected many examples of patients arriving at the nursing home without any information about their diagnosis and without any orders for medication. In fact, the majority of patients are admitted with only enough information to fill out the form for the undertaker. Rarely does a physician write a progress note when he visits a patient.

In several nursing homes, there were no written orders for medication several months after admission and charting of medication given to patients was done poorly.

We believe strongly that a standardized charting procedure should be initiated by the State.

A serious handicap for better care has been very frankly stated. In brief, physicians find little stimulation in the care of the chronically ill and elderly in the nursing home environment. Once the diagnosis and specific treatment have been accomplished, there seems little else to do except the treatment of clinical episodes as they occur. We have no answer for this. It may be if more training in the care of the chronically ill were included in the curriculum of medical schools, this attitude would be altered in future generations.

Summary

This project was done by physicians to observe the quality of care in nursing homes.

Serious gaps in clinical care were found. Suggestions are made for improvement.

Most doctors are frankly not interested in the care of the chronically ill and elderly in the nursing home environment.

Dr. Jackler, 14 Gilman Street, Waterville, Maine
Dr. Pfeiffer, 14 Gilman Street, Waterville, Maine
Dr. Pomerleau, 179 Main Street, Waterville, Maine
Dr. Sturtevant, 33 College Avenue, Waterville, Maine
Dr. Veilleux, 173 Main Street, Waterville, Maine
Dr. Willard, Thayer Hospital, Waterville, Maine

Secondary Thrombocytopenic Purpura: Infectious Mononucleosis Or Nitrofurantoin Toxicity

Richard T. Chamberlin, M.D.*

Secondary thrombocytopenic purpura may present a serious problem in establishing the etiology of the platelet loss. When the possibility of a drug-induced thrombocytopenia exists it becomes particularly important to advise the patient to avoid certain drugs in the future. Recently we had the opportunity to study a young man who had purpura, genitourinary tract bleeding, and melena. He developed these signs during an illness which was found to be infectious mononucleosis but also while he was receiving nitrofurantoin. It is the purpose of this report to present his case which demonstrates the difficulty in establishing the etiology of a potentially life threatening situation.

Case Report

A seventeen year old white male high school student was admitted to the Thayer Hospital on August 17, 1962, with a chief complaint of a skin rash of one week's duration. He was well until June of 1962 when he developed a sore throat, headache, swollen glands in his neck and epistaxsis. After symptomatic treatment at home had failed to bring improvement, he was hospitalized at another hospital where he was treated with aspirin, anahist and combiotic. His symptoms gradually subsided and he was discharged with a diagnosis of purulent sinusitis. He did not regain his usual strength but otherwise felt well until the first week in August when he developed a very dark colored urine. On examination by his physician, he was told there was blood in the urine and he was given nitrofurantoin (Furadantin®) 100 milligrams four times a day. Six days later he developed a rash on his legs which became progressively worse, and when he was seen for this, the drug was discontinued after a total of ten days treatment. He had received no other drugs at that time. The rash persisted and spread to his trunk and arms, and it became associated with ecchymoses, increasing weakness, pallor, melena, and more hematuria. The patient was referred for further evaluation.

At the age of two he had an illness characterized by irritability, pallor and dark urine. He was told this was nephritis, but he had no further genitourinary symptoms until the present illness. There was no history of allergy or of bleeding tendency. One uncle had died at the age of five of severe hemorrhaging from the mouth and nose. No other history of bleeding or of leukemia in the family was obtained.

On examination he was a well-developed, well-nourished, white male who was pale and appeared chronically ill. Temperature was 98.6 degrees by mouth, pulse 90, and blood pressure 130/90. There were petechiae of the soft palate and sub-conjunctival areas, a severe fine purpuric rash covering the lower extremities, and several large ecchymoses on both arms and legs. There was no icterus. There were a few small submaxillary lymph nodes but no post-auricular or posterior cervical adenopathy. Head, ears, eyes, nose, and throat were otherwise unremarkable. The chest was clear to auscultation and percussion. The cardiac examination was normal. There were no palpable abdominal organs or masses. The neuro-musculo-skelatal system was also normal.

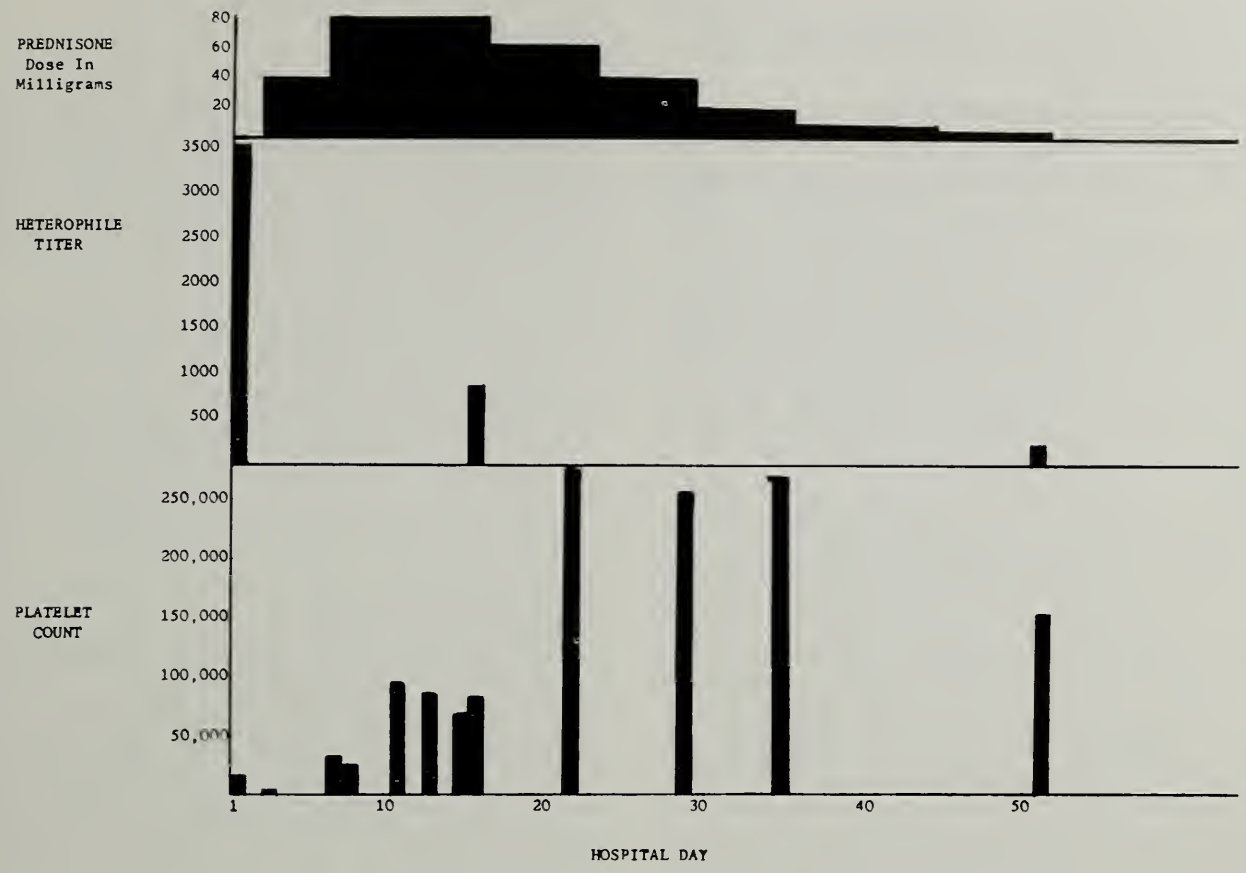
Laboratory: Urinalysis revealed a specific gravity of 1.012, no albumen or glucose, and 80-100 red cells perhigh powered field with 1-3 white cells. Stool guaiac was positive. Hemoglobin 11.8 grams. Red blood count 3.9 million. White blood count 9,100 with 30 polys, 4 bands, 65 lymphocytes, and 1 eosinophile. 10 to 15% of the lymphocytes were abnormal or atypical. Platelet count 15,000. VDRL negative. Clotting time 6 minutes (Lee White). Clot retraction was poor. Bleeding time 11 minutes, 2 seconds (Ivy). LE test negative. Heterophile titer was positive in a dilution of 1:3584 with differential absorption on guinea pig antigens positive in dilution 1:896 and on beef erythrocyte antigens negative. Bilirubin 1.0 with direct fraction of 0.8. Transaminase 14 units. Bone marrow aspiration revealed slight increase in erythropoiesis. The granulocytic series was slightly depressed, an no megakaryocytes could be seen on any of the smears. Chest x-ray was normal. KUB film showed a slightly enlarged spleen.

After the above studies were performed, it was felt the patient had thrombocytopenia either secondary to infectious mononucleosis or to nitrofuratoin toxicity. His platelet count fell to 3,000 on the third hospital day, and he was started on corticosteroid in a dose equivalent to 40 milligrams of prednisone daily. This was increased to 80 milligrams a day, and the chart depicts the response of the platelet count to this therapy.

Attempts were made to identify a specific drug toxicity as a cause for the thrombocytopenia by the following methods: (a) Skin tests using penicillin, streptomycin, and nitrofurantoin were negative. (b) 1.0 milliliters of the patient's serum was incubated for one hour at 37 degrees centigrade with 1.0 milliliters of platelet rich plasma. There was no change in the platelet count of the plasma when compared to a normal control. (c) 0.6 milliliters of the patient's serum was added to 6.0 millileters of normal blood, and the mixture showed complete clot retraction at the end of four hours. 0.6 milliliters of normal serum was added to 6.0 milliliters of the patient's blood and this mixture showed no more clot retraction than did the patient's blood alone. (d) Five milliliters of normal blood, 0.5 milliliters of the patient's serum, and 0.75 milliliters of a saturated solution of nitrofurantoin were mixed and showed complete clot retraction in four hours. (e) No platelet antibodies could be detected in the patient's blood. These tests were done with both plain and irradiated platelets as well as with and without including nitrofurantoin in the test mixtures.

The patient was asymptomatic as the bleeding manifestations cleared, and he was discharged on therapy on August 31, 1962. He remained well except for developing marked acneiform skin changes on decreasing doses of prednisone during which time his platelet count remained normal. All therapy was discontinued on October 1, 1962 at which time his blood and platelet counts were normal. He still had a lymphocytosis and an unabsorbed heterophile titer which was positive in a dilution of 1:224. On December 27, 1962 the patient's blood count was normal. There were 35% lympho-

*From the Medical Service, Thayer Hospital, Waterville, Maine.



cytes in his differential of which four were atypical. His platelet count was normal and his heteraphile was positive in a dilution of 1:56.

Discussion

A complete discussion of the differential diagnosis of purpura and of thrombocytopenia is beyond the scope of this report. The reader is referred to some of the excellent articles on these subjects.[1,2,3] It is generally agreed that the bone marrow of primary or idiopathic thrombocytopenic purpura shows a hyperplasia of the megakaryocytes. The absence of this finding in our case was taken to mean that he had a thrombocytopenia of the secondary type.

There is little doubt about the diagnosis of infectious mononucleosis in this case. Even if one adheres to the strict criteria as suggested by Hoagland,[4] the patient's clinical history, peripheral white count, and heterophile titer with absorbtion on guinea-pig kidney establish this diagnosis with certainty. Bleeding phenomena have been found in about 7% of all cases of mononucleosis,[5] and thrombocytopenia specifically has been listed as a complication of the disease.[6,7]

The mechanism of thrombocytopenia in mononucleosis has not been established, and the findings particularly in the bone marrow have been quite variable.[8] In an article on the pathology of infectious mononucleosis, Custer cited a case of Dameshek's in which the bone marrow showed an increase in the number of megakaryocytes but there was markedly diminished platelet formation.[9] More recently Wolff and LeWinter described a case of mononucleosis with acute thrombocytopenia as the only presenting complaint. The bone marrow showed a normal granulocytic and erythrocytic series, and although the megakaryocytes were increased in number, they were normal in appearance.[10] While the bone marrow of our case does not correspond closely to those which are best described in the literature, apparently a lack of megakaryocytes in the bone marrow is not entirely inconsistent with the diagnosis of infectious mononucleosis with thrombocytopenia.[8]

Since its introduction as a urinary antibiotic, nitrofurantoin has been implicated as a cause of several diverse reactions. Although the most common of these has been gastrointestinal irritation with nausea and vomiting, Trafton et al listed cases having generalized pruritis with stiffness of the joints, febrile responses, and urticaria with angioneurotic edema.[11] Other reactions have included hemolytic anemia,[12] anaphylaxsis,[13] and pulmonary infiltrates with pleural effusions.[14] No report of bone marrow depression or of thrombocytopenia could be found, and in a recent report on the intravenous use of nitrofurantoin, Halliday and Jawetz found no evidence of bone marrow depression.[15]

Nevertheless nitrofurantoin which is N-(5 nitro-2-furfurylidene)-1-amino-hydantoin has a close chemical relative which has been listed as a bone marrow depressant. Dilantin® has been implicated not only in general bone marrow depression, but also is listed as a possible cause of thrombocytopenia of the autoimmune type[1]. It is also interesting that dilantin was

the cause of a peculiar hypersensitivity reaction which had all of the presenting features of a case of infectious mononucleosis.[16]

Attempts to prove a specific sensitivity reaction to nitrofurantoin in our case failed. Skin tests were negative, and platelet antibodies were absent. Attempts to alter the platelet count or clot retraction of normal blood by adding the patient's serum both with and without nitrofurantoin in the test mixtures were not conclusive. These latter tests were repeated three months after the patient recovered using the method of Weintraub, et al, which is said to detect drug sensitivities retrospectively,[17] and again they were negative. The passive transfer method of identifying a drug induced thrombocytopenic purpura as described by Burger[18] was not attempted.

Several possibilities exist to explain the chain of events in our case. (a) The thrombocytopenia was caused by infectious mononucleosis with nitrofurantoin playing no part. (b) Nitrofurantoin was the cause of the platelet defect. (c) Some other drug particularly a common one such as aspirin which patient's commonly take when they are ill, was at fault. (d) An as yet unreported cross reaction between drug (s) and/or disease exists. One of the first two possibilities seems most likely. Since a bone marrow which shows a complete depression of one of the blood forming elements is most commonly associated with toxic drug reactions, it is tempting to list this case as one of the first reported instances of thrombocytopenia due to nitrofurantoin toxicity, with the blood findings of infectious mononucleosis being the residual of the illness the patient had in June. However, since the patient had hematuria in June and again in August before he was given nitrofurantoin, it is more likely that this is one of the relatively rare instances in which infectious mononucleosis may cause thrombocytopenic purpura.

Summary

A case of secondary thrombocytopenic purpura is presented in which the etiology of the platelet defect lay between infectious mononucleosis and sensitivity to nitrofurantoin. The difficulties in establishing the exact etiology are discussed. Although the author concludes that the thrombocytopenia was due to infectious mononucleosis, the potentially serious implications of such reactions to drugs makes it imperative to attempt to identify the etiological agent whenever possible and to report it.

Addendum

The author wishes to thank Dr. Samson Fisher who performed the skin tests, Mr. Maurice Laskey who did the platelet and clot retraction studies, and the Blood Characterization and Preservation Laboratory of Harvard University and the Laboratories of the Protein Foundation of Jamaica Plains, Massachusetts, which did the platelet antibody studies under the direction of James L. Tullis, M.D.

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The Stroke Syndrome
An Outline Of Its Current Management

Jose M. Rodriguez, M.D.*

The extensive use of arteriographic studies which led to the recognition of the importance of extracranial lesions as a cause of cerebral ischemia or infarction has been the most important single factor in the tremendous progress in the understanding of cerebrovascular disease that has occurred during the last decade.

The old concept that the "stroke syndrome" resulted almost invariably from a thrombosis or a rupture of small capsular arteries is no longer tenable. The report in the early 50s of cases of stroke treated successfully by surgical removal of an atheromatous plaque of the carotid bifurcation stimulated the interest of neurosurgeons and vascular surgeons throughout the country with the result of a complete revision of our method of diagnosis and treatment and of the overall management of these patients. This enthusiasm has spread to all branches of medicine and has led to a more intensive appraisal of anticoagulant and fibrinolytic therapies. The increase in life span has also contributed to the ever-growing number of patients which have to be treated for cerebrovascular disease, making it a problem that concerns not only the practicing physician but also the health organizations. In the last few years, there have been numerous symposia on the subject and at the present time there are collaborative studies in progress which will undoubtedly clarify the overall picture in the management of these patients which in some aspects is still controversial. So far, much has been accomplished in the improvement of contrast medium and safer arteriographic techniques. Because, by necessity, most of these patients are handled by the family doctor or the general practitioner it is important that at least a schematic outline of its current management be made available to them. That is the object of this paper.

A schema of the methods used at arriving at a diagnosis will be presented first followed by an outline of the treatment of the different etiopathogenic entities. The steps to be followed in the examination are as follows:

(1) History: Whenever possible, the following should be clearly determined:

(a) Existence of prodromata or of previous similar episodes.

(b) The rapidity and mode of progression of the symptoms.

(c) The existence of previous arterial thrombotic episodes such as coronary thrombosis or peripheral arterial disease.

(d) The presence of other diseases such as diabetes, cardiac decompensation, or systemic disease or other probably emboligenic illnesses.

(e) The existence of previous symptoms related to the central nervous system such as headache, neurological deficits, dizziness, etc.

(2) Complete Physical Examination: Important to evaluate the patient's general condition and the presence of associated illnesses.

(3) Complete Neurological Examination: Important to evaluate the degree of brain damage and also if there is a single or multiple lesion.

(4) Auscultation of the Neck and Head: The importance of this part of the examination has been realized only recently. More than 50% of atheromatous plaques can be diagnosed in this way either by the presence of a murmur or diminution of intensity in the carotid or vertebral sounds. Occasionally a murmur is heard when the contralateral carotid is occluded. The carotid arteries are heard best at the level of the upper border of the thyroid cartilage which is approximately at the bifurcation. It should be performed with the head in normal position and also in extension, flexion, and rotation to the right and left. The propagation of the murmurs can also be heard at the level of the orbits or of the temporal fossae. The ausculation of the vertebral arteries is done by placing the stethoscope just posterior to the sternocleidomastoid muscle in the supraclavicular triangle. This also should be done in the normal position and in extension, flexion, and rotation to right and left.

(5) Lumbar Puncture: It is important in order to evaluate the degree of intracranial pressure and also the presence or absence of blood in the spinal fluid and the changes in the chemistry. It is best done with the patient on the side using a #20 Ga. needle and entering the third lumbar interspace. A water manometer should be used in all instances with accurate recording of the pressure.

(6) Skull Films: The usefulness of this diagnostic procedure is based on the fact that in more than 50% of the patients the pineal gland is calcified and gives an important indication of any space-occupying lesion.

(7) Electroencephalogram: This is used mostly as an indication of the physiology of the brain and permits us to follow the evolution of the lesion in serial tracings. The use of a tilt table and carotid compression

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at the time of the recording is still under study. Apparently it is useful in giving us information in regard to the collateral circulation.

(8) Ophthalmodynamometry: It measures the difference of retinal arterial pressure in both eyes. It is useful in evaluation of obstruction of the carotid arteries and occasionally of large arteriovenous malformation in the brain. It requires an experienced examiner in order to diminish the percentage of false results.

(9) Fluorescein Circulation Time: It also uses the observation of the retinal vessels and compares the circulating time of Fluorescein injected intravenously, between the arm and either optic fundi.

(10) Arteriographic Studies: It is the single most important diagnostic tool that we have at present. In recent years due to the use of better contrast mediums and better techniques, it has been made a safe procedure in competent hands. It can be done under local anesthesia although in certain conditions general endotracheal anesthesia is preferable. Whenever possible, the carotids and vertebral systems should be visualized in their entire course. It gives valuable information in regard to obstructive lesions of the extracranial and intracranial portion of the vessels irrigating the brain and also may disclose the presence of a hematoma or a space-occupying lesion.

By following this diagnostic outline, an accurate diagnosis will be made in most of these patients and it will be possible to handle each particular case more intelligently.

Treatment

(1) General: It will be used in all patients with an impaired state of consciousness.

(a) Bed Rest: Elevated head rest to 30% to facilitate the venous return whenever the blood pressure has been maintained. If the blood pressure has dropped from previous levels it is better to keep the patient flat.

(b) Airway: If the patient is comatose and secretions are difficult to remove, it is better to do a tracheostomy in order to improve the aeration of the lungs and decrease the intrathoracic and intracranial pressures. The tracheostomy should be done early, preferably in the first 24 or 48 hours.

(c) Care of the Skin: Change position every hour and keep bed sheets clean and free of wrinkles.

(d) Care of the Bladder: A Foley catheter should be inserted in all comatose patients and the output measured carefully.

(e) Care of the Bowels: Enemas should be used every 48 or 72 hours.

(f) Sedation: If the patient is too restless, chloral hydrate in suppositories, 20 gr., every 6 hours, should be used. Occasionally, especially if there is a tendency to convulsions, Dilantin, 100 mg. t.i.d., should be used. Avoid the use of opiates.

(g) Nutrition: During the first 48 hours, fluids can be given intravenously, not to exceed 2000 cc. in 24 hours. In prolonged comatose states, it is better to feed the patient through a gastric tube.

(h) Oxygen: If cyanosis is present, use oxygen with 5 to 7% of CO_2 through a small catheter placed in the tracheostomy tubing.

(i) Antibiotics: One of the modern, long-acting sulfas should be used to prevent urinary infection.

(j) Physiotherapy and Rehabilitation: It should be started early with passive mobilization of the paralyzed extremities. Later on when the patient is conscious, a more active participation of the patient should be encouraged.

(2) Intracranial Occlusive Disease: The diagnosis should be made mostly by arteriographic studies which show the vessels at the neck to be adequate and the intracranial vessels to show either the absence of the middle cerebral or other branches. There will be no displacement of the vessels and the spinal tap will show a normal pressure and the fluid will be clear. Besides the general measures, anticoagulant therapy should be used. However, anticoagulant therapy should not be started until a definite diagnosis has been made and should only be used when adequate laboratory facilities are available. The following is an outline of the most successful anticoagulant therapy in my experience:

An infusion of heparin, 100 mg. in 1000 cc. of 5% glucose in water, should be started intravenously using 20 to 30 drops per minute. The clotting time which was determined prior to the beginning of the infusion should be maintained at a therapeutic range of about double the normal. It should be tested 2 hours after the infusion has begun and from then on every 6 hours until it is regulated properly. It should be discontinued 2 hours before arteriography and should be resumed after the patient returns to his room if indicated. If bleeding occurs, protamine sulfate, 1% solution, 50 mg. intravenously is given slowly. This usually suffices in blocking the circulating heparin. However, the injection may be repeated. In case protamine sulfate is not available, a blood transfusion should be used.

If prolonged anticoagulant therapy is contemplated, the best agent is warfarin sodium (Coumadin). It can be administered orally or parenterally and reach therapeutic levels in 12 to 24 hours. The initial dosage is 50 mg. Two or 3 days later, the maintenance dosage is between 5 and 10 mg. Prothrombin times should be compared with normal controls before starting the medication and then daily during the first week and from then on once a week. The therapeutic range is between 15 and 30% of normal. If hemorrhagic complications occur, vitamin K should be used.

The use of fibrinolysin is still in the experimental stage. Its usefulness appears to be limited to the intra-arterial infusion. Of the cerebrovasodilators, the most effective is the inhalation of CO_2 5 to 7% in oxygen or room air. It may be effective in maintaining circulation in the so-called marginal zone.

(3) Cerebral Embolism: The diagnosis is made

when there is evidence of an emboligenic lesion in a situation otherwise similar to the intracranial occlusive disease. The management is the same as the former. Perhaps a stellate block may help the improvement of the collateral circulation in certain cases.

(4) Extracranial Occlusive Disease: The diagnosis is made by history of repeated episodes, by auscultation of the neck, and by arteriography. The decision of performing an endarterectomy or other corrective measures should be made after careful consideration of multiple variables in each particular patient. In general, patients that show severe stenosis with transitory symptoms or progressive hemiplegia should be operated upon. Also, cases which present themselves with a complete hemiplegia of less than 6 hours duration may be amenable to surgery.

(5) Elongation and Kinking of Arteries at the Neck: Corrective surgical measures are indicated.

(6) Intracranial Hemorrhage: The diagnosis is made by history, by lumbar puncture, and by arteriography. If arteriography shows an hematoma, neurosurgical intervention with evacuation of the clot is indicated. If the hemorrhage is small or multiple, only general measures should be used. Anticoagulants are contraindicated.

(7) Various Other Conditions such as Brain Tumors, Subdural Hematomas, Ruptured Intracranial Aneurysms, or Vascular Malformations: These will be encountered occasionally when a good diagnostic plan has been carried out and they will be treated accordingly.

Summary

An outline of the methods used in the diagnosis of cerebrovascular disease has been presented together with the current management of the different etiopathogenic conditions which results in a cerebrovascular accident. The importance of the use of arteriography has been stressed.

It is not possible any longer to maintain a passive attitude in the management of a patient with a cerebrovascular accident. He should have the benefit of the advances made in the diagnosis and treatment of this disease. As it is now unthinkable to treat a patient suffering from a gastric hemorrhage without doing a g.i. series, it is not in the too distant future when the same will be true in treating a patient with a cerebrovascular accident without the benefit of cerebral arteriography.

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Report Of An Educational Program Regarding Cigarette Smoking Among High School Students

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The fact that smoking tobacco has many harmful side effects has been known for a long time. For many years physicians have advised against smoking to patients who have suffered from diseases of the gastrointestinal tract, the cardiovascular system, chronic pulmonary conditions, etc., but only in the past few years, when the shocking rise in lung cancer became evident, did people begin to sit up and take notice. The extensive investigations which followed are known to all of us, and it was soon apparent that there seemed to be a casual relationship between cigarette smoking and lung cancer. Something had to be done. By 1959, Dr. Daniel Horn, and his co-workers at the American Cancer Society had carried out their now widely acclaimed study of factors regarding cigarette smoking among high school students in Portland, Oregon.[1] In 1961, a program of positive action was undertaken in the State of Maine, as a cooperative effort between the Department of Health and Welfare, and the Department of Education.

A conference was held with Dr. Horn, and it was decided to use his questionnaire as a model, making certain modifications to suit the particular needs of this program. It was felt that the study in Portland, Oregon was completely authoritative and the conclusions just. Various factors had been brought to light in regard to what caused the teenager to begin to smoke in the first place, what social factors were involved, and what educational approaches could be used to influence the teenager in this regard. The cooperation was enlisted of the superintendents of twenty-six high schools across the State of Maine, who volunteered their schools for this study. Without their cooperation, this program would never have been possible. In the fall of 1961, a questionnaire was administered to 10,000 or more students. The questionnaire was so devised that the first portion was designed to determine the smoking habits of the students, and the second portion to determine their attitudes toward cigarette smoking. This survey resulted in findings very similar to those in the Portland, Oregon study. There was a steady rise in smoking habits among our students from freshmen to senior year as shown in Graph 1 and Table 1. In fact, 14% of our freshmen students (ninth grade) were already smoking in the neighborhood of half a pack of cigarettes a day, and an additional 5% of our freshmen were smoking regularly at least once a week. The curve rises sharply upward so that by the senior year (twelfth grade), 33% of the students are smoking in the neighborhood of half a pack of cigarettes a day, with an additional 6% of this class smoking regularly at least once a week. Similarly, about 45% of the ninth graders had never smoked, but by the time the senior class in high school is reached, only 27% of this group are non-smokers.

In regard to our attitude study, we presented the student with seven statements:

A. Smoking Costs More Than The Pleasure Is Worth
B. When I Have Children I Hope They Never Smoke
C. There Is Nothing Wrong With Smoking
D. Smoking Is Bad For Your Health
E. Smoking Is A Dirty Habit
F. Smoking Is A Major Cause Of Lung Cancer
G. There Is Nothing Wrong With Smoking If You Smoke Moderately

With each of these statements, the student could either strongly agree, mildly agree, neither agree nor disagree, mildly disagree, or strongly disagree. The original survey merely presented us with a base line attitude which the students had in this regard.

The twenty-six schools were next divided into two groups, one an experimental group, the other a control group. Numerically, statistically, and geographically, these two groups were almost identical. The major objectives of the program were to determine the effects of an educational program on (1) attitudes towards smoking, and (2) smoking behavior among high school students. The experimental group would receive an educational program on smoking throughout the school year, whereas, the control group would merely be surveyed but would receive no educational exposures. With excellent consultation service provided by the United

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1. Horn, Daniel, Ph.D., et al., "Cigarette Smoking Among High School Students," *American Journal of Public Health*, Vol. 49, No. 11, Page 1497-1511, Nov. 1959.

GRAPH 1

PERCENTAGE DISTRIBUTION OF STUDENT SMOKING HABITS
IN TWENTY-SIX MAINE HIGH SCHOOLS

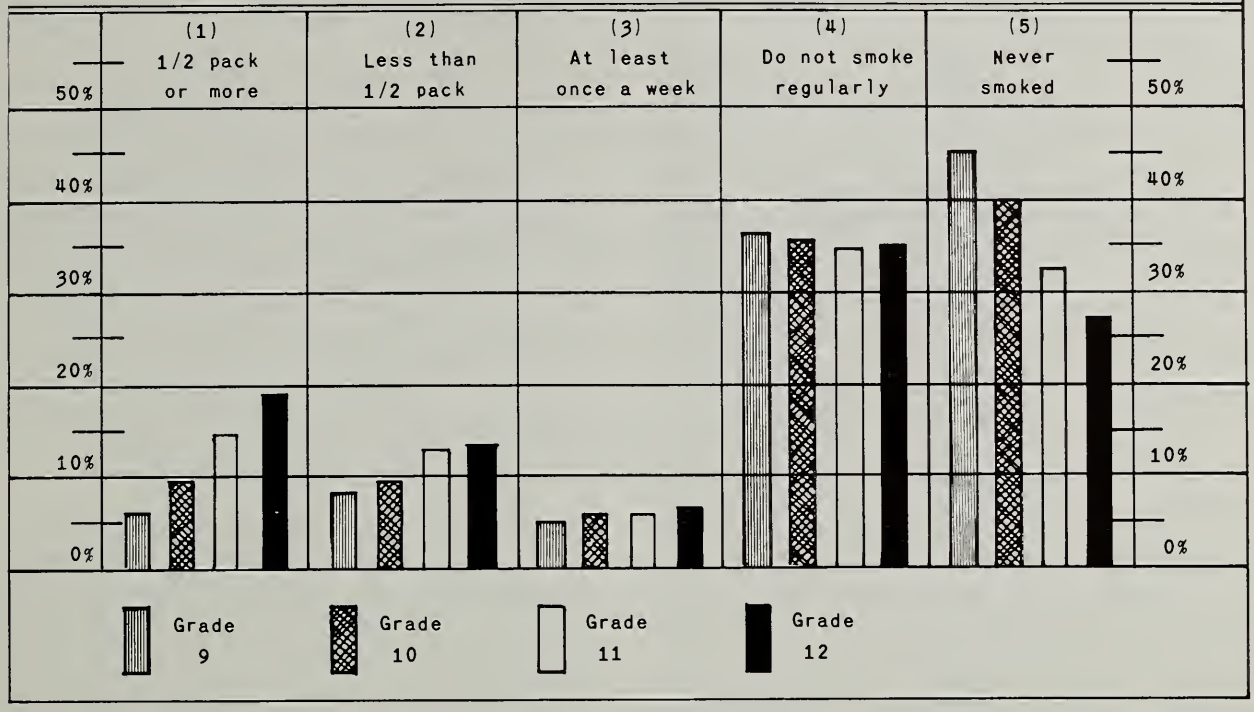

TABLE 1

PERCENTAGE DISTRIBUTION OF STUDENT SMOKING HABITS
IN TWENTY-SIX MAINE HIGH SCHOOLS

School Class	Total Number	Total Percentage	(1) 1/2 pack or more	(2) Less than 1/2 pack	(3) At least once a week	(4) Do not smoke regularly	(5) Never smoked
9	3460	100.00	6.0	8.1	5.0	36.4	44.5
10	2724	100.00	9.5	9.7	5.7	36.0	39.1
11	2212	100.00	14.0	12.5	5.7	35.7	32.1
12	2023	100.00	19.4	12.7	6.1	34.8	27.0
TOTAL	10419	100.00	11.2	10.4	5.5	35.8	37.1

States Public Health Service, it was decided that five educational exposures would be offered throughout the school year. These exposures were to be well-spaced, and each one was to include (1) an audio-visual component, such as a film, filmstrip, etc., (2) a discussion period, and, (3) a pamphlet or piece of literature which the student was to take home and read. Various problems such as, variation in teachers' attitudes, courses which would best integrate with this subject matter, etc., were surmounted, and five such educational exposures were presented to the students in the experimental group during the 1961-1962 school year. Using the Portland, Oregon study as a guide, the educational approach was adult in type, presenting the material in a straight-from-the-shoulder attitude. An attempt was made to employ both-sidedness, presenting the pro's and con's of cigarette smoking. Contemporary as well as remote effects of cigarette smoking were presented. The student was advised to weigh all the evidence, think for himself, and draw his own conclusions. At the end of the school year in June of 1962, all students in both the experimental and control groups were re-surveyed, using the same questionnaire as at the beginning of the year. The results were interesting.

In regard to student smoking habits, these had not changed at all. In fact, there was a tendency toward a slight rise among the groups of students who were considered regular smokers as shown in Table 2.

TABLE 2

PERCENTAGE DISTRIBUTION OF STUDENT SMOKING HABITS BY GROUPS AND BY SURVEY*

	½ Pack or More			Less than ½ Pack			At Least Once A Week			Not Regularly			Never Smoked		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	11.2	12.5	0.65	9.7	11.2	0.65	5.7	5.6	0.50	35.9	37.7	1.00	37.5	33.0	1.00
Control	11.2	12.8	0.60	10.9	11.2	0.60	5.4	5.9	0.45	35.8	36.8	0.90	36.7	33.3	0.90

Those who smoked at least once a week, or those who smoked not regularly exhibited essentially no change and there were fewer students who had never smoked at the end of the school year than there were at the beginning of the year. Both the experimental and control groups behaved similarly insofar as smoking habits themselves were concerned. It was felt that the reason for the slight rise in smoking habits of all students involved, was that the students were now a year older and were behaving as they would in the next school year. The freshmen had now developed the smoking habits of sophomores, the sophomores had developed habits similar to those of juniors, the juniors had developed habits similar to seniors, etc. In effect, then, the smoking habits of the survey group had not changed, and, in particular, the experimental group had not been affected by the educational program presented to them.

In regard to attitudes of the students toward smoking, the results are distinctly striking as shown in Table 3.

A. "Smoking Costs More Than The Pleasure Is Worth"

In the first (fall) survey in the experimental group 56.3% "strongly agree." In the second (spring) survey, this figure rose to 61.0%. In the control group, on the other hand, there has been no such change. In the first survey, 55.4% "strongly agree," and in the second survey, only 53.5% "strongly agree."

In the first survey, the experimental group had 0.9% more who "strongly agree" than the control group. In the second survey, it had 7.5% more.

B. "When I Have Children I Hope They Never Smoke"

The experimental group in the first survey had 57.9% who "strongly agree," and in the second survey this figure rose to 65.6%. In the control group, 54.9% "strongly agree" on the first survey, and only 53.9% "strongly agree" on the second survey.

In the first survey, the experimental group had 3.0% more who "strongly agree" than the control group. In the second survey, it had 11.7% more.

C. "There Is Nothing Wrong With Smoking"

This, of course, is a negative type of statement and was deliberately presented as such. The experimental group on the first survey had 39.7% who "strongly disagree," and on the second survey this figure rose to 48.3%. The control group, on the other hand, on the first survey had 37.3% who "strongly disagree," and on the second survey this figure dropped to 33.8%.

In the first survey, the experimental group had 2.4% more who "strongly disagree" than the control group. In the second survey, it had 14.5% more.

D. "Smoking Is Bad For Your Health"

In the experimental group on the first survey, 60.5% "strongly agree." On the second survey this figure rose to 62.2%. In the control group on the first survey, 57.8% "strongly agree," and on the second survey only 49.6% "strongly agree."

In the first survey, the experimental group had 2.7% more who "strongly agree" than the control group. In the second survey, it had 12.6% more.

E. "Smoking Is A Dirty Habit"

The experimental group in the first survey had 30.0% who "strongly agree." In the second survey, this figure rose to 34.3%. In the control group on the first survey, 29.0% "strongly agree," and in the second survey this figure rose to 31.5%.

In the first survey, the experimental group had 1.0% more who "strongly agree" than the control group. In the second survey, it had 2.8% more.

F. "Smoking Is A Major Cause Of Lung Cancer"

In the experimental group on the first survey, 33.1% "strongly agree," and, in the second survey, this figure rose to 41.7%. In the control group on the first survey, 32.0% "strongly agree," and in the second survey, this figure dropped to 25.6%.

In the first survey, the experimental group had 1.1% more who "strongly agree" than the control group. In the second survey it had 16.1% more.

G. "There Is Nothing Wrong With Smoking If You Smoke Moderately"

The experimental group in the first survey had 18.4% who "strongly disagree" with this statement, and in the second survey this figure rose to 24.4%. This, again, is a negative statement which theoretically requires the student to disagree. In the control group on the first survey, 17.4% "strongly disagree" with the statement, and in the second survey, only 16.1% of the students "strongly disagree."

In the first survey, the experimental group had 1.0% more who "strongly disagree" than the control group. In the second survey, it had 8.3% more.

*Note to Tables 2 and 3:

S.E.—Standard Error
If the difference between the two proceding figures (first and second survey) is two or more times the standard error, then the change is of statistical significance.

1ST—First Survey — October, 1961
Experimental Group — 4740 students involved
Control Group — 5680 students involved

2ND—Second Survey — June, 1962
Experimental Group — 4480 students involved
Control Group — 5300 students involved

TABLE 3

PERCENTAGE DISTRIBUTION OF STUDENT SMOKING ATTITUDES BY GROUPS AND BY SURVEY

Attitude A — SMOKING COSTS MORE THAN PLEASURE IS WORTH

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	56.3	61.0	1.00	19.2	17.6	0.80	17.3	15.4	0.75	4.6	3.8	0.40	2.6	2.2	0.30
Control	55.4	53.5	0.95	19.0	20.0	0.75	17.9	17.6	0.75	4.6	5.6	0.40	3.2	3.3	0.35

Attitude B — WHEN I HAVE CHILDREN I HOPE THEY NEVER SMOKE

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	57.9	65.6	1.00	15.3	14.1	0.75	21.2	16.4	0.80	3.3	2.2	0.30	2.3	1.7	0.30
Control	54.9	53.9	0.95	15.3	16.3	0.70	22.7	24.2	0.80	3.5	3.2	0.35	3.6	2.4	0.30

Attitude C — THERE IS NOTHING WRONG WITH SMOKING

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	8.6	5.5	0.55	14.6	10.5	0.70	20.4	18.7	0.85	17.7	17.0	0.80	39.7	48.3	1.00
Control	9.1	7.9	0.55	13.9	15.3	0.70	21.4	22.1	0.80	18.3	20.9	0.75	37.3	33.8	0.90

Attitude D — SMOKING IS BAD FOR YOUR HEALTH

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	60.5	62.2	1.00	20.2	20.6	0.85	11.6	10.5	0.65	4.0	3.1	0.40	3.7	3.6	0.40
Control	57.8	49.6	0.95	21.1	25.9	0.80	13.2	16.8	0.70	3.8	4.1	0.40	4.1	3.6	0.40

Attitude E — SMOKING IS A DIRTY HABIT

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	30.0	34.3	1.00	16.6	18.9	0.80	27.6	25.6	.90	10.8	8.9	0.65	15.0	12.3	0.75
Control	29.0	31.5	0.95	16.7	17.9	0.75	27.8	26.5	.85	11.6	9.8	0.60	14.9	14.3	0.70

Attitude F — SMOKING IS A MAJOR CAUSE OF LUNG CANCER

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	33.1	41.7	1.00	23.9	25.1	0.85	32.0	25.5	0.95	5.5	3.7	0.45	5.5	4.0	0.45
Control	32.0	25.6	0.95	24.0	22.5	0.80	30.9	38.8	0.90	6.5	6.3	0.40	6.6	6.8	0.40

Attitude G — THERE IS NOTHING WRONG WITH SMOKING IF YOU SMOKE MODERATELY

	Strongly Agree			*Mildly Agree*			*Neither Agree Nor Disagree*			*Mildly Disagree*			*Strongly Disagree*		
	1st	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*	*1st*	*2nd*	*SE*
Experimental	18.1	10.8	0.75	28.4	23.1	0.90	21.5	23.4	0.85	13.5	18.3	0.75	18.4	24.4	0.85
Control	18.3	17.5	0.75	28.5	28.5	0.85	22.1	23.8	0.80	13.7	14.1	0.65	17.4	16.1	0.75

In summary then, an experimental study has been undertaken in both education and health. A program has been established in the State of Maine, whose major objectives are to determine the effects of a planned educational endeavor on (1) the attitudes toward smoking and (2) smoking behavior among high school students. At the end of one year, measurements reveal that the attitudes of the students toward cigarette smoking have been favorably altered. At the same time, no change has been noted in the actual smoking behavior patterns among these students. It is planned to continue along the same lines, altering the program as indicated or necessary for at least four years, in order that the freshmen class may be followed through its senior year in high school. A major difficulty which has been encountered has been the scarcity of educational material on this subject of cigarette smoking and health. The State

Continued on Page 71

Report Of Advisory Committee To Dean H. Fisher, M.D. On Medical Aid To The Aged Under Kerr-Mills

In March 1962 the committee met with Dean H. Fisher, M.D. and Mr. Simonds to discuss "The M.A.A. Manual." This was the plan of the Department of Health and Welfare to provide care to the medical needy under Kerr-Mills.

In-State Hospitalization

The essential provision of this plan was to provide hospital care at rates ranging from $26.00 a day to $15.00 a day for the first 15 days; then the next 30 days at $20.00 to $11.00 a day. The rate paid to each hospital was dependent upon a variety of qualifications which determined which one of three catagories the hospital fell into.

Although it was not truly a function of the committee to decide on this problem, the various qualifying criteria were discussed at length. No definite conclusions were reached, but it was the opinion of the committee that an independent accounting firm qualified to evaluate hospital costs on a uniform basis might resolve the problem to the satisfaction of the Maine Hospital Association and the Department of Health and Welfare. It was noted that even Blue Cross had been unable to satisfactorily settle the problem of relative hospital costs after 15 years of struggling with it.

In May 1962 Dr. Fisher met with a group of doctors and hospital administrators at the request of the M.M.A. At this meeting there was much exchange of opinion and exposition of the plan of the Department of Health and Welfare. No conclusions were reached.

Comprehensive Clinic Care

The second service to be provided to M.A.A. patients according to the Manual was diagnostic and therapeutic care in clinics.

This care was to be limited to the following diseases: cardiac, arthritis, circulatory and cardiovascular disease, tumors, diabetes, and eye disease which might result in blindness if not treated.

In order to qualify for one "clinic visit," at least one diagnostic procedure or professional consultation must be included in the service provided. Routine follow-up visits were not to count as a visit unless the above services were needed.

In order to qualify as a clinic the following standards were set: (1) Board certified or qualified physicians directly supervising the care for each specific category mentioned above (cardiac, etc.); (2) Complete laboratory facilities; (3) Complete x-ray facilities — therapeutic and diagnostic; (4) Services of physiotherapist; (5) Qualified social worker; (6) Registered pharmacist.

Clinic care for M.A.A. patients under this proposed program will include payment for diagnostic and treatment services, including professional fees, laboratory fees at scheduled rates, and limited drugs per schedule.

The drugs which will be paid for include only the initial supply and only those commonly used for the six diseases mentioned.

Transportation to the clinic will be paid for if the distance to the clinic is more than 25 miles and other means of transportation is not available.

The patient, in order to qualify for clinic care, must be referred by, or have the written consent of his attending physician or osteopath, or on referral following discharge from the hospital.

Homemaker and Visiting Nurse Service

When essential to a medical treatment program as determined by the *clinic physician* and where available homemaker and visiting nurse service will be provided if the patient is thus enabled to return to or remain at home.

The above is a synopsis of the provisions of the M.A.A. program as initially outlined by the Department of Health and Welfare in February 1962.

Following this meeting in March 1962 a report which follows was made to the Council:

The committee met with Dr. Fisher and Mr. Simonds for the purpose of reviewing the proposed plan of the Department of Health and Welfare for Medical Assistance for the Aged.

The program as proposed has been outlined to the Maine Hospital Association, the Federal Department of Health and Welfare and at this meeting with representatives of the Maine Medical Association.

The general principles of care as outlined by Dr. Fisher were:

1. To provide some additional care for the aged over and above what is now being provided in order to qualify the State for Kerr-Mills funds.
2. To provide those additional services yet keep within the appropriation of the Maine Legislature.
3. To increase payments to hospitals for M.A.A. recipients who are being cared for in the hospitals.
4. To increase the quality of medical care to the aged.
5. To utilize the existing medical services now provided in the State.
6. To make no radical changes in the method of practice which might be regretted or difficult to change.

These general principles were felt by the committee to be admirable and we found no objection to them.

The specific proposals in the Manual which were specifically reviewed by the committee were relative to "In-State Hospitalization" and "comprehensive clinic care."

HOSPITAL CARE —

This provides for 45 days per year of hospital care at varying rates depending upon the category classification of the hospital. Most of the discussion centered around the qualifying specifications of each category. These in general dealt with quantity and quality of care or rather extent of service provided to the patient. Although the median cost of the group was used as basis of the perdiem cost, these rates of payments were felt to be generally fair.

It was the feeling of some members of the committee that The Maine Hospital Association should have an advisory committee authorized to assist the commissioner in determining the "category classification" qualifications and other administrative details of the plan as it applies to hospitals.

NON-INSTITUTIONAL CARE —

This is the only new service provided for the aged and falls into the following categories:

1. Clinic Care — is limited to patients with the following diseases:

(a) cardiac, (b) arthritic, (c) circulatory, (d) tumors, (e) diabetes, (f) eye diseases which might result in blindness.

Each clinic visit in order to qualify for payment must include "one essential diagnostic procedure or professional consultation." Payment will be made for diagnostic and treatment procedures as well as laboratory and professional fees at fixed rates, the latter not announced.

2. Homemaker and visiting nurses services — will be provided when determined by *clinic* physician where available and if essential for medical treatment. It doesn't state whether these nurses will be provided to the discharged hospital patient.

3. Initial supply only of drugs prescribed at the clinic — only on clinic physician's prescription and only initial supply of which there is no apparent limit.

4. Transportation of patient to clinic — patients who have no personal or community means of transportation or who live more than 25 miles away from "qualified clinic" will be provided transportation to clinics.

COMMENT:

None of the members of the committee had had a previous opportunity to read over the plan as outlined. The underlying concepts of these proposals as presented above are admirable. However, there are several aspects of the plan which may have serious impact on the practice of medicine in Maine.

The most serious of which, in my opinion, is the practice of medicine by hospitals, the concentration of control of the program in the hands of hospital administrators, boards of trustees, and clinic specialists, either of the staff or employed by the hospital. The obvious effect of such a plan would be to increase rather than decrease the number of hospital days and admissions. Much of the brunt of this extra load on already crowded clinics will be borne by house officer, resident staff, and staff specialists. The paper work and expenditure of time and effort to "work up" patients who come in solely to get "a free load" of medication might be enough to break the back of the program.

The greatest danger to the medical profession is the part of the plan which proposes to pay for professional services in the clinic patient. Not only does this break long standing traditions, but also would be a terrific propaganda weapon for the opposition. It could lead to abuses and encourage hospitals to practice medicine by hiring full or part-time physicians to carry the clinic load.

I would strongly suggest that in section 5a under *comprehensive clinic care* on page 12 the words *"including professional fees"* be deleted.

Add as subsection C Proportionate costs of administration and medical education may be included as legitimate charge for M.A.A. patient clinic call.

One obvious omission is the failure to provide nursing home care for M.A.A. patient. However, the commissioner intends to transfer the patients who require nursing home care to O.A.A. category if it would become necessary. I do not know the legal or social implications of this move.

The provisions regarding eligibility for M.A.A. assistance in the Maine plan differs from the Kerr-Mills Bill particularly regarding Personal Property. This should be changed and coincide with the intent of the Kerr-Mills Bill which allows the elderly patient to own his own home no matter what the value.

In April 1962, the Council sent the following recommendations to the various hospital staffs and administrators:

To: President and Executive Director, Maine Hospital Association; Administrator of each Hospital in the State of Maine; President and Secretary of each Hospital staff; Carl E. Richards, M.D., Sanford; Philip P. Thompson, Jr., M.D., Portland; Harold N. Willard, M.D., Waterville; Dean H. Fisher, M.D., Commissioner of Health and Welfare, State of Maine; Copy to Members of the Council of the Maine Medical Association.

The Council of the Maine Medical Association, at its recent meeting, discussed the problems connected with the Kerr-Mills type program for Maine as submitted by the Department of Health and Welfare. It was voted to inform you that the Council of the Maine Medical Association is in unanimous agreement that the implementation of the Kerr-Mills Bill in the State of Maine is woefully inadequate.

We are in favor of the Kerr-Mills type of approach to the medical care of the over 65 age group and are still against utilizing the social security mechanism as a means for providing medical care for this segment of our population. We do not approve of the present program because:

1. It is inadequate and does not actually provide any significant increase in medical services to the over 65 age group.

2. It arbitrarily divides the several hospitals of the State into categories and increases the rate of payment to some.

3. If the program, as proposed by Health and Welfare, is not accepted by a hospital, that hospital *may* lose all categories of State Aid.

4. The proposed program goes beyond the accepted method of rating hospitals as set up by the Joint Committee on Accreditation.

5. It violates the intent of the act by reducing benefits paid to certain community hospitals where elderly patients would normally desire to be cared for.

6. The payment for in-patient care based on out-patient facilities is not logical.

7. Small communities, where large numbers of patients reside, are unable to have board-qualified men as department heads in their hospitals and hence must accept a subordinate rating.

8. The tentative program was set up without consultation or approval of the Maine Medical Association or representatives of small hospitals.

9. Figures published by the State Department of Health and Welfare reveal that less than 40% of State Aid patients are cared for in the large hospitals.

The Council of the Maine Medical Association strongly recommends that this program should be studied and discussed by your hospital staff and administrator before it is approved and put into effect.

The Council of the Maine Medical Association wishes to urge you to consider carefully all the possible ramifications of diverting the monies collected as fees (clinic), under this program, to any hospital use.

For the Council
DANIEL F. HANLEY, M.D.
Executive Director

June 1962 — No action or recommendations taken by the House of Delegates on the matter.

July 1962 — Niles L. Perkins, Jr., M.D. accepted the position as Medical Advisor to the Department of Health and Welfare.

January 1963 — Dr. Fisher asked to have the Maine Medical Association's Advisory Committee to meet with him. He wished to have further guidance for expenditure of the funds proposed in the new budget of 1962-63.

The actual expenditures for M.A.A. — 1961-62 were $401,999. The budget for 1962-63 is to be increased to $1,549,332. Thus, the program is to be expanded four fold during the next year if the legislature appropriates the funds to do so. The total budget for the Department of Health and Welfare for 1962-63 is $33,470,183.

February 1963 — Upon request of the Chairman, Dr. Perkins was added to the Advisory Committee to enhance the effectiveness of the committee and to form a closer liaison with the activities of the Department of Health and Welfare in its M.A.A. program.

The committee felt very strongly that physicians' services for M.A.A. patients in the clinics should not

be paid for by M.A.A. funds at this time. The following report was therefore sent and presented personally to the Council at a regular meeting of that group on February 10, 1963:

SUPPLEMENTAL REPORT OF ADVISORY COMMITTEE TO DEAN H. FISHER, M.D.

In the report to the Council of April 1962, it was our opinion that Professional fees for care of clinic patients be deleted from the program proposed by Dean Fisher for M.A.A. under Kerr-Mills. To our knowledge this was not acted upon by the Council.

Action by the Council is desired because of the imminent independent action by the staff of the Maine Medical Center to accept these fees. It is the understanding of this committee that the Maine Medical Center is the only hospital or only clinic facility in the state eligible for or at least applying for funds under this provision "fees for professional services" for M.A.A. clinic patients. If there is action by the staff to accept these fees it will undoubtedly set a precedent for the entire state and start a chain reaction which would be difficult to reverse.

To quote from the report of April 1962 to the Council:

"The greatest danger to the medical profession is the part of the plan which proposes to pay for professional services for the clinic patient. Not only does this break long standing traditions, but also would be a propoganda weapon for the opposition, (Kennedy King-Anderson proponents). It could lead to abuses and hospitals to practice medicine by hiring full or part time physicians to provide clinic care, otherwise practice of medicine by hospitals.

"It is suggested that in section 5a of the Manual under *comprehensive clinic care* on page 12 (M.A.A. Manual of Department of Health and Welfare) the words "including professional fees" be deleted. Add as subsection C Proportionate costs of administration and medical education may be included as a legitimate charge for M.A.A. patient clinic care."

If these changes are acceptable to the Council, it is suggested that Dean Fisher and all hospital medical staffs and administrators be immediately notified of this change in policy of the Maine Medical Association.

This is not to suggest that physicians are never to be recompensed for services provided to M.A.A. patients under Kerr-Mills provision. The ultimate provisions have yet to be clarified in this regard. At the moment it seems wise to keep "medical fingers out of the till" where the money involved is so small and the potential adverse propoganda impact so great.

To quote from the recommendation of the A.M.A. Council on Medical Service, J.A.M.A. Oct. 27, 1962, p. 438-40, "that, where physicians forego payment from the welfare program, emphasis be placed on this decision as medicine's contribution to the initiation of the program. . . . that in these instances the state medical association reserve the right to negotiate for payment later, on the basis of more experience or more adequate appropriation."

February 14 — The committee met in Augusta to discuss the medical program for M.A.A. for the immediate future and the following recommendations were made:

1. For the present no fees for professional services be made for M.A.A. patient care — in hospitals, clinics, at home or in nursing homes.

2. The funds previously proposed for these physician services be used for patient care "out of the hospital."

3. Nursing Homes —

It was the opinion of the committee that Nursing Home Care was the most critical deficiency in the overall area of care of the aged. The method for improving their quality and efficiency, aside from increased appropriations to nursing homes for M.A.A. and O.A.A. patient care, was felt to be the establishment of schools for nursing home attendants and courses for owners and operators.

(a) Schools for Nursing Home Attendants (Nurses — Practical Nurses — Aides — and Cooks) be set up in 5 or 6 scattered areas of large population density —

These schools are to be patterned after those now in operation in the Waterville area. Courses are to be given by specially trained nurses, physicians, dietitians, psychiatrists and State Public Health Nurses preferably at and largely by the personnel of established nursing schools of community hospitals.

These schools should give a series of courses so all nursing home attendants could theoretically attend — at least 2 or 3 a year. These could well be coordinated with nurses and nursing aide schools.

(b) Courses for Nursing Home Operators and Owners —

These courses should provide the owner and/or operator of nursing homes with a knowledge of equipment, charts, marketing for meal planning, laundry and kitchen equipment, techniques and other means of increasing efficiency and quality of patient care. It should be aimed toward increasing cost efficiency of their operation, improvement of the physical plant to include architectural advice for remodeling, safety measures against patient injury as well as fire hazards, wholesale purchasing of equipment and guides for purchasing special equipment useful for invalid patients.

4. Homemaker Services —

The next critical lack in the care of the aged appeared to be the need for "homemakers." This should be explored by the Department of Health and Welfare. Local voluntary agencies who have started or considered such training programs should be encouraged and partially financed by M.A.A. funds.

Many other possible uses of M.A.A. funds were discussed such as drugs for M.A.A. patients, mobile diagnostic and preventative health services such as for glaucoma prevention, inspection teams for nursing homes, complete diagnostic and therapeutic survey of each M.A.A. eligible member, financing care for M.A.A. and O.A.A. patients with state funds via Blue Cross-Blue Shield and private insurance, establishing mobile clinics for remote areas, transportation of patients to clinics, paying for professional services in nursing homes and to patients who live many miles from a physician and use of funds for purposes of post graduate education of hospital staff as well as intern-resident staff.

All these matters and others will be explored again at a later date.

For the present the committee awaits the formation, activities and recommendations of Dr. Niles Perkins' "Multiple Disciplinary Committee" to the Department of Health and Welfare. This committee is to work out the details and implement the present program and its proposed expansion.

M.A.A. Advisory Committee
CARL E. RICHARDS, M.D.
HAROLD N. WILLARD, M.D.
NILES L. PERKINS, JR., M.D.
PHILIP P. THOMPSON, JR., M.D., *Chairman*

Maine Heart Association Notes

Psychological Factors In Heart Disease

"A number of studies have revealed that perceived emotional stress can produce various transient cardiovascular responses. The reactions may include changes in heart rate and cardiac output . . . , abnormalities in heart rhythm, changes in blood pressure, peripheral resistance, blood viscosity, blood clotting time, and serum cholesterol levels. An hypothesis suggested by the findings which requires further research follows: If these cardiovascular responses were sustained . . . , they would ultimately influence the onset or course of coronary artery disease. These studies also suggest that emotional tension . . . may place an additional strain on an already diseased heart.

"Sufficient evidence has accumulated to indicate that the psychological aspect of heart disease should be among the factors to be investigated in prospective studies of factors related to the development of heart disease." (Circulation, Volume 27, pages 113-117. 1963.)

(Pollard, J. W. et al, *Circulation* 25:311, 1962.)

Problems Associated With Longterm Anticoagulation Therapy

"Pollard, et al., report on 126 patients treated by longterm anticoagulation with particular concern for the problems and limitations of the treatment itself.

"Only 57% of the patients remained in the therapeutic range for more than 80% of the time. Hemorrhage, which occurred particularly in the older patient or the patient with arterial hypertension, occurred in one-third of the cases and was a major complication in 10%. Three deaths were attributed to hemorrhage. Nearly 70% of bleeding episodes occurred with prothrombin activity in therapeutic range. Patients who stopped therapy had an increased incidence of recurrent vascular or thromboembolic episodes."

(Pollard, J. W. et al, *Circulation* 25:311, 1962.)

Announcement

Two new diet booklets prepared by the American Heart Association, in cooperation with the American Dietetic Association and the Heart Disease Control Program are now available by writing the Maine Heart Association, 116 State Street, Augusta, Maine. The first is entitled "Planning Fat-Controlled Meals for Unrestricted Calories" the purpose of which is to reduce the amount of chloresterol and other fatty substances in the blood. The second "Planning Fat-Controlled Meals for 1200 and 1800 Calories" is also intended to retard or prevent atherosclerosis.

(Circulation, Volume 27, pages 113-117, 1963.)

Interim Meeting

Maine Medical Association House of Delegates

Sunday, April 7, 1963 at 2:00 P.M.

Auditorium, Kennebec Journal Building
274 Western Avenue, Augusta, Maine

Presiding, Linus J. Stitham, M.D., Dover-Foxcroft
Speaker of the House of Delegates

THE ORDER OF BUSINESS WILL INCLUDE —

FINANCIAL STATEMENT FOR 1962

PROPOSED BUDGET FOR 1964

MMA COUNCIL

Action on the report by Robinson L. Bidwell, M.D., Portland, Chairman of a Committee appointed to Review the Size, Make-up and Mode of Operation of the M.M.A. Council. This is in accordance with a vote by the House of Delegates on June 17, 1962 "that this report be referred back to the local county societies with instructions that it be given to the county delegates for action to be taken at the Interim Meeting in April, 1963." (Copy of this report was sent to the county secretaries following the June, 1962 meeting).

AMENDMENT TO THE M.M.A. CONSTITUTION AND BY-LAWS as proposed by the Piscataquis County Medical Society.

Constitution, Article VIII, Officers — Insert the word "Speaker" after the words "(if a member of the Association)."

By-Laws, Chapter III, Duties of the House of Delegates (page 9), Section 4 — Change the word "President-Elect" to read "Speaker of the House."

COMMITTEE REPORTS

Complete agenda for this meeting will be mailed to each of the county delegates and alternates.

Maine Medical Association Council

The Council will meet at the Kennebec Journal Building, Augusta, Maine at 10:00 A.M.

County Society Notes

CUMBERLAND

January 17, 1963

Two hundred and six members and guests attended the combined meeting of the Cumberland County Medical Society and Woman's Auxiliary which was held at the Eastland Motor Hotel in Portland, Maine on January 17, 1963.

Mr. William Clark of Kennebunk, guest speaker of the evening, spoke on "A Country Boy Looks at Medicine Today."

February 21, 1963

A meeting of the Cumberland County Medical Society was held at the Eastland Motor Hotel in Portland, Maine on February 21, 1963.

After a social hour and dinner, the meeting was called to order by the President, Philip P. Thompson, Jr., M.D.

Thomas A. Martin, M.D., Councilor for the First District, gave a resume of the meeting of the Council of the Maine Medical Association which was held on February 10, 1963.

Boris A. Vanadzin, M.D. announced that the Oral Polio Vaccine Clinics are to be held in Portland on April 21 and June 2.

The Secretary commented on the lack of meetings of the State Health Insurance Committee and felt that this should be a subject for discussion at the next meeting of the House of Delegates.

The remainder of the evening was devoted to a panel discussion of the Needs of the Aged, Their Health and Happiness. Members of the panel were Richard S. Hawkes, M.D., Moderator; Mrs. Christopher Tracy and Miss Helen Lockwood, Portland and Mrs. Franklyn Adams, Yarmouth.

ALBERT ARANSON, M.D.
Secretary

ANDROSCOGGIN

January 17, 1963

A meeting of the Androscoggin County Medical Association was held at the St. Mary's General Hospital in Lewiston, Maine on January 17, 1963.

The meeting was called to order by the President, Morris E. Goldman, M.D. with thirty-four members present. Guests included State Senators Romeo Boisvert and Emile Jacques; Robert O'Connor, Esq. and Daniel F. Hanley, M.D.

A panel consisting of Drs. Charles A. Hannigan, Moderator; Charles F. Branch; Philip L. Archambault and John T. Konecki presented a program, "That Chiropractic Treatment of Emergency Workman Compensation Cases Would be Contrary to the Public Welfare," because:

(1) Adequate medical care may be delayed.
(2) Injury may be infected in certain conditions. (cases)
(3) Chiropractors are not able to present medical testimony before compensation board.
(4) The employer's bills for compensation treatment will be increased.

Dr. Branch outlined the educational requirements for a chiropractic degree pointing out that 5 states allow no chiropractic practice; only 21 states have college requirements prior to chiropractic training; one-half of these require one year; the other two years. Of all the Federal and State Funds allocated for research study and aid to schooling, none were given to chiropractic work as it is not recognized.

Dr. Archambault pointed out that the Chiropractors are not recognized by the Public Health Service, any of the Armed Forces or Veterans Administrations. The qualifications of Chiropractors are such that they can't give testimony before compensation boards. By law they are not permitted to practice medicine and surgery; they may treat only by spinal adjustment, heat and massage. He presented two cases with films showing where the diagnosis was missed, and treatment prolonged at great additional expense.

Dr. Konecki pointed out that by law, Chiropractors are not permitted to take x-rays, but they do. He pointed out the poor quality of the films. Many times this is indicated by inadequate, outmoded equipment, yet the patient pays as much or more than they would for films of the best quality. He cited several cases where manipulation would have resulted in severence of the spinal cord. He had several examples of advertising sent to patients, including physicians, in which claims for cure, treatment, etc. were greatly exaggerated.

Senator Boisvert mentioned the fact that he was elected by the people to serve them. The only opposition against the chiropractic bill is from the medical mass, so he suggested if others have opposition they should let them know or he'd have to go along with the majority.

DONALD L. ANDERSON, M.D.
Secretary

HANCOCK

February 13, 1963

A meeting of the Hancock County Medical Society was held at the Hancock House in Ellsworth, Maine on February 13, 1963.

Drs. Elihu York of Bar Harbor and Morris A. Lambdin of Ellsworth were elected to membership in the society.

A letter from George L. Maltby, M.D., Chairman of the Medical Advisory Committee to the Bureau of Motor Vehicles for the State of Maine, concerning a proposal to report medically unfit drivers was read and the society went on record approving this type of program in principle.

Anders T. Netland, M.D. of Bangor presented a discussion on "Adolescent Vaginal Bleeding Problems."

RUSSELL G. WILLIAMSON, M.D.
Secretary

PENOBSCOT

February 19, 1963

Thirty-five members attended the meeting of the Penobscot County Medical Society which was held at the Pilot's Grill in Bangor, Maine on February 19, 1963. The President, Allison K. Hill, M.D. presided.

Dr. John P. Connelly, Chief of the Children's Clinic at the Massachusetts General Hospital, was the guest speaker. He spoke on "Fluid Balance in Childhood" and discussed the history of intravenous therapy, the evolution of studies on electrolytes and body chemistry and illustrated his talk with case histories of salicylate poisoning.

Robert F. Gloor, M.D. of Corinna was elected to membership in the society.

Robert J. Barrett, Jr., M.D. suggested that a poll of the members be taken to find out which ones would be willing to

serve on national, state or county committees, and which committees they would be interested in serving.

A discussion was held concerning the increase in national yearly dues.

FREDERICK C. EMERY, M.D.
Secretary

CORRECTION: Penobscot County, February issue, Page 46, Paragraph 2, last line, should read "sponsored by Division of Cancer Control, Department of Health and Welfare" instead of Maine Cancer Society.

New Members

CUMBERLAND

Lewis M. Feiges, M.D., 331 Veranda Street, Portland
Hirsh Sulkowitch, M.D., 29 Deering Street, Portland
Boris A. Vanadzin, M.D., 389 Congress Street, Portland
William L. Wilkie, M.D., 331 Veranda Street, Portland

ANDROSCOGGIN

Gilbert R. Grimes, M.D., 185 Webster Street, Lewiston

YORK

John J. Lorentz, M.D., Kennebunkport

News, Notes and Announcements

Pineland Hospital and Training Center Lecture and Film Conference Room — 1:00 P.M.

March 21 — *Choice of Psychological Tests as Determined by Various Types of Mental Retardation*
Mr. James Cox, M.A.
Head of the Department of Psychology
Pineland Hospital and Training Center

March 28 — *Diabetes in Youth* — Film — 45 min. — Staff of the Joslin Clinic — Boston
The film first presents the natural history of diabetes and the recognition and prognosis of the various stages. It includes symptomatology, diagnosis, and management and unrehearsed interviews with patients and their families to illustrate some of the problems and their solutions. Complications of both the disease and its treatment are covered in detail. The final portion of the film is devoted to current research in diabetes and includes the concept of prediabetes.

National Registry of Deaths from Mycetism

The National Registry of Deaths from Mycetism maintains a file of deaths attributed to ingestion of wild mushrooms (1957 to date).

Physicians are requested to send notice of all such deaths (age, sex, date, locality) to Robert W. Buck, M.D., Secretary, Massachusetts Medical Society, 22 The Fenway, Boston 15, Massachusetts.

State of Maine Board of Registration of Medicine Secretary — George E. Sullivan, M.D., Waterville, Maine

Physicians Licensed to Practice Medicine and Surgery in the State of Maine November 13-15, 1962

THROUGH EXAMINATION

Felix Ades, M.D., c/o Memorial Hospital, Pawtucket, Rhode Island
Wolfgang M. Auerbach, M.D., 755 Fenimore Street, Apt. LG, Brooklyn, New York
Laszlo R. Bendik, M.D., 1160 Bushwick Avenue, Brooklyn, New York
Fayez Ibrahim Antoine Bittar, M.D., 451 Clarkson Avenue, Kings County Hospital, Brooklyn, New York
Alexander A. Boytar, M.D., 28 Kingsbury Street, Gardiner, Maine
Hans van den Broek, M.D., 1901 First Avenue, New York, New York
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Book Review

Practical Anesthesiology — By Joseph F. Artusio, Jr., M.D., Professor of Anesthesiology, Cornell University Medical College, New York, N. Y. and Valentino D. B. Mazzia, M.D., Professor and Chairman of the Department of Anesthesia, New York University School of Medicine and Post Graduate Medical School, New York, N. Y. Published by C. V. Mosby Co., St. Louis, Missouri, 1962. Pp 318 with 28 illustrations. Price $7.75

Drs. Artusio and Mazzia have collaborated to produce a handbook of current practices in anesthesiology designed for medical students and general practitioners. Techniques for general anesthesia are limited to those considered safe for medical students, while techniques for regional anesthesia are omitted as so many texts in this field are already available.

The forty-three chapters are arranged in four parts:

Part I — Basic Considerations including history, theory, pharmacology and a very sketchy anatomy.

Part II — Preanesthesia Considerations among them evaluation, preparation, risk and premedication.

Part III — Anesthesia Considerations including vital signs, stages and signs.

Part IV — Techniques of Administration among them inhalation and intravenous techniques, muscle relaxants and spinal anesthesia.

Part V — Special Considerations including in part fires, shock, monitoring, special techniques, new agents, resuscitation recovery rooms.

As an introductory text for students and general practitioners this book contains some chapters not seen in many others such as medicolegal aspects of anesthesia, research in anesthesia and the role of the anesthesiologist in internal medicine. If "don'ts" are as important as "do's" in anesthesia the forty-five random "don'ts" listed in chapter 32 represent one of the most concentrated and comprehensive collections of sound advice recorded in the anesthesia literature.

Each chapter is followed not by a bibliography but by a suggested reading list which is short, up to date and very appropriate. As it's title might imply Practical Anesthesiology, which is quite readable, straightforward, comprehensive yet free of unnecessary detail, should stimulate the reader to further study in the rapidly expanding field of anesthesiology.

HOWARD P. SAWYER, JR., M.D.
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DEPARTMENT OF HEALTH AND WELFARE — *Continued from Page 63*

of Maine has developed some interesting new pamphlets for use in this program, but many new and appealing audio-visual aids must be developed for this purpose, possibly by one or more federal agencies. It is generally felt that the most opportune time at which to begin such an educational program is at the fifth or sixth grade level, and Maine is expanding this health education program this year to include many of these younger children.

If such a program can be made to be effective, fewer high school teenagers, and ultimately fewer adults, will become cigarette smokers. It is felt that a favorable change in smoking habits will result in a decrease in the death rate from lung cancer and a similar decrease in morbidity and mortality from a host of other diseases.

ACKNOWLEDGMENT

The author is indebted to associates in the State Department of Health and Welfare and the State Department of Education for their invaluable collaboration in making this study and report possible. These are: Ruth T. Clough, M.Sc.Hyg., Health Education Consultant, Edson K. Labrack, M.P.H., Director, Division of Research and Vital Records, both in the Department of Health and Welfare; Quentin R. Unger, M.S., Director, Health and Physical Education, Department of Education and Dale F. Welch, A.B., Statistician, Division of Research and Vital Records, Department of Health and Welfare.

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Amebic Granuloma Of The Colon – Case Report*

Milan A. Chapin, Ph.D., M.D.

In their review of 148 fatal cases of amebiasis, Kean, Gilmore and Van Stone[1] observed that the disease could be rapid and fulminating, that the correct diagnosis was made in only one third of the total, that surgery in this disease was attended with a high mortality, and that the significant complications causing death were intestinal perforation and peritonitis, protracted dysentery, liver abscesses and amebic lung abscesses. Peritonitis occurred terminally in over one half of the cases. Other less common complications were brain abscesses and amebic involvement of the skin in the perianal area or around ileostomy openings.

Another more uncommon complication of amebiasis which has been recognized in recent years, is that of granuloma formation in the colon. This result of chronic infestation, frequently called an ameboma, may be single or multiple and may be located in any portion of the large bowel, particularly in the cecum. The importance of recognition of these, in differentiation from carcinoma, which they simulate, lies in the fact that surgical intervention is attended by a high mortality.

The purpose of this paper is to report another instance of multiple amebic granulomas of the colon, not merely because of its rarity but, rather, to document the apparent long asymptomatic interval of 20 years which seemingly occurred between the initial episode of dysentery and the subsequent symptomatic amebomas.

Case Report

Mr. L. C., Hospital No. 241548, a 41 year old paper mill worker, was admitted to the Central Maine General Hospital March 23, 1962, complaining of rectal pain after bowel movements of some 17 months duration. Previously very well and healthy, in the Fall of 1960 he began having nervous symptoms and loose stools associated with anorexia and gradual weight loss. In November 1960, he began to have pain in the rectal area and subsequently developed a perirectal abscess which opened and drained spontaneously after 10 days with no recurrence. In April 1961, he began to have epigastric and generalized abdominal cramps with gas and some emesis of ingested food. Anorexia became more marked and he began having 3-4 loose stools without cramps but with rectal pain lasting one or more hours after each bowel movement. This pain appeared after passage of the stool, was severe, localized and incapacitating, and had bothered him to the time of this admission. There had been occasional streaking of blood in the stools and also some rectal oozing after his bowel movements. In November 1961, he was admitted to another hospital where a barium enema study was interpreted as showing ulcerative colitis and he was treated with chloromycetin for one month and then was given sulfaguanidine which he had continued to take steadily. With this treatment he had gradually improved and had regained some appetite and strength. In spite of this he had continued to have the rectal pain after bowel movements. He had had no fever or night sweats and his weight of 180 lbs. had been maintained.

While in the North African campaign in 1942, he had had moderately severe dysentery for about 2 weeks. Because it was not accompanied by much fever or cramps he had not reported it on sick-call. He found that sitting in the salt water seemed to ease it and this constituted the only treatment. The diarrhea subsided after 2 weeks and there never was recurrence of it until the present illness. During the subsequent Italian campaign he had mild jaundice for about a week, which also subsided without sequellae.

Other than for his mother having hypertension and diabetes, there was no family history of hereditary or other pertinent disease.

On physical examinations, his temperature was 99.0°, pulse 80, respirations 18, blood pressure 130/80 and weight 178 lbs. He was well developed and nourished and in no distress. His general color was slightly pale. His abdomen was not distended; there was no enlargement of viscera, masses or tenderness. Rectal examination disclosed 2 protruding, firm, non-

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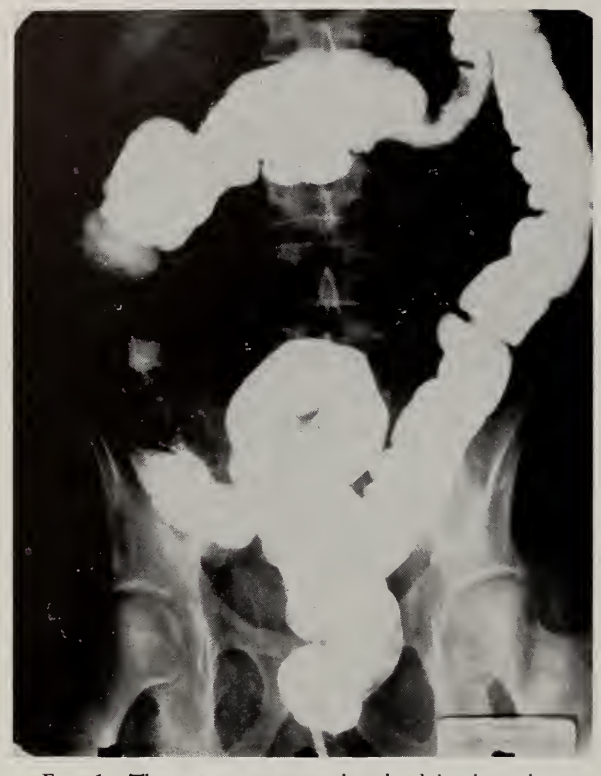

FIG. 1: There are two areas involved in the colon. The cecal lesion is more clearly shown in Fig. 2, but here one can see the constant constriction caused by the amebiasis in the distal transverse colon.

tender hemorrhoids and some irregularity of the internal ring with tenderness.

His hemoglobin was 13.9 gms. (89%), the microhematocrit 44%, the white cell count 16,400 with a differential of of 71% polymorphonuclears, 1% stab, 23% lymphocytes and 5% monocytes. Examination of the urine showed a specific gravity of 1.017 with no acetone, sugar or protein being present and with a normal sediment. The sedimentation rate was 31 mm/hr. (corrected), the BUN 14.9 mg.% and the serology was negative. No evidence of amebae or other parasites were found in 5 different stool examinations. An x-ray of the chest was normal. A complement fixation test for amebiasis was positive. Proctosigmoidoscopy disclosed a small anal fissure and a normal rectum and lower sigmoid colon. Barium enema study showed two constant lesions, one 6-7 cm. in length involving the distal transverse colon and the other causing extreme deformity of the cecum (Figs. 1 and 2). These findings were interpreted by the radiologist as being highly suggestive of amebic granuloma of the colon.

Treatment consisting of chlortetracycline, 250 mg. 4 i.d. for one week, followed by Diodoquin®, 0.8 mg. daily in divided doses for 3 weeks, was instituted. While in the hospital, his low-grade temperature slowly defervesced and he gradually felt better. This treatment was continued after discharge for about 4 months, following which his repeat barium enema study revealed marked improvement with only cecal deformity persisting, presumably due to residual fibrotic changes (Fig. 3). Since he continued to have the rectal pain and tenesmus, the anal fissure was surgically treated with complete relief of pain and he has subsequently returned to work and has remained well.

DISCUSSION

Although amebae or its cystic form were never found in this patients' stools, this is the common finding in

FIG. 2: The marked deformity and shrunken appearance of the cecum is characteristic of amebiasis. The terminal ileum is not primarily involved, but is secondarily distorted by adhesions. This helps in the differential diagnosis from regional ileitis and ileo-cecal tuberculosis.

FIG. 3: Follow-up barium enema several months later, after patient had received specific therapy, shows marked improvement. There is some residual deformity in the ileo-cecal area, caused by permanent fibrotic changes.

instances of amebic granulomata and is believed due to the fact that the amebae are buried in the inflammatory granulomatous tissue in the intestinal wall. The typical appearance of the lesions by x-ray barium contrast study, the positive complement fixation test and the response to specific therapy, however, should allow documentation of this as another instance of chronic amebic granuloma of the colon. Similar diagnoses were recorded by Spicknall and Pierce[2] in the 4 cases of amebic granuloma which were reported by them in 1954.

Another feature of this patients' disease believed to be noteworthy is the long asymptomatic interval which lasted from the episode of dysentery in North Africa until the time his present illness began — a span of almost 20 years. In spite of the fact that he had appar-

ent infectious hepatitis of short duration in the ensuing Italian campaign, there was no relapse of the dysentery or even diarrhea, such as was frequent among soldiers traveling from one country to another, and his subsequent service in the U.S. Army was uneventful healthwise. It therefore seems most probable that this man had amebic dysentery for about 2 weeks during the North African campaign which subsided with "ocean dip therapy" and was not severe enough to cause sick-call attention. This was the only period of diarrhea which he remembers to the time of his present illness. From the time of his discharge from the U. S. Army, he worked steadily, often carrying two eight hour shifts, one in a paper mill and the other with his brother in construction work. It was not until the accidental death of one son and the long illness of another son injured when lightning struck their boat, when he developed nervous symptoms, that his intestinal symptoms also began and the diagnosis of amebomas of the colon was eventually made. There was thus some 20 years of asymptomatic intestinal involvement with amebic infestation during this time, unaccompanied by ill health or even minor gastrointestinal symptoms. To the writer's knowledge, this is the longest period reported to have occurred between initial infection and the subsequent finding of amebic granuloma of the colon.

In their concise and informative review of amebic granuloma of the colon, Spicknall and Pierce[2] reported that since the first clinical report in 1926 there were, to that time, some 197 cases reported in the literature. These authors emphasized the need for high index of suspicion and careful differential diagnosis resulting in institution of specific medical therapy, in view of the fact that the literature has documented many deaths occurring after operations which were done because the lesions were thought to be carcinomas or appendiceal abscesses, and resulted in acute flare-ups of the fatal fulminant form of the disease. They noted the basic pathology to be a granulomatous thickening of the colon, resulting from necrosis, secondary bacterial infection, and to a general cellular and proliferative reaction, to the extent that large masses may form and cause obstructive symptoms, intussusception, etc. The incidence of amebic granuloma of the colon in their series was 4 cases in a total of 214 instances of amebiasis, 14 of whom had hepatic abscesses. Of the 197 cases of amebic granuloma which they reviewed, the amebomas occurred most commonly in the cecum (40.9%), next in the rectum (26.5%), and 9.5% occurred in the transverse colon, the remaining 24% occurring in other areas of the colon. They emphasized that symptoms and signs were varied, non-specific and incidental, that symptoms were usually the result of complications of the amebiasis, and that only a high index of suspicion with regard to the disease resulted in accurate diagnoses. The latter is most often made by x-ray findings with multiple involvement being of greatest aid. According to them, other laboratory aids such as stool examinations for amebae or cysts or the complement fixation test are only occasionally helpful, but that they should be accomplished in all suspicious cases. They suggested that the differential diagnosis should include all conditions in which a mass and diarrhea coexist: appendiceal abscess, diverticulitis, regional enteritis, tuberculous enteritis, actinomycosis, benign tumors, carcinoma, etc.

In the treatment of amebic granuloma, Spicknall and Pierce[2] emphasize the limitation of surgery to emergency care of complications and the institution of specific medical therapy as promptly as possible. The latter, they feel, in this problem of ameboma, should not be limited to a single drug, and preference given to diodoquin or chloroquin in conjunction with a tetracycline. Their experience is substantiated by the results of treatment of the patient reported herein in which diodoquin and tetracycline in repeated administration has resulted in apparent cure.

Summary

1. An instance of multiple amebic granulomas of the colon and its successful specific medical treatment is described.

2. A brief review of this complication of amebiasis with particular discussion of its recognition in differential diagnosis is made.

3. Emphasis is made of the long quiescent interval of amebic infestation in this patient, since it appears that nearly 20 years with no intestinal symptoms separated the initial dysentery from the final symptomatic illness.

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Factitial Metabolic Alkalosis*

Charles A. Hannigan, M.D., Robert A. Frost, M.D. and William B. Perkins, M.D.

The purpose of this presentation is to acquaint you with a clinical condition not previously reported. It is concerned with two patients whom we have encountered in the past eight years. Each of these patients vomited to the extent where he or she developed a marked metabolic alkalosis with hypokalemia, hypochloremia, and uremia. In each instance, the diagnosis was obscure since both of these patients concealed the vomiting.

The alkalosis was corrected by parenteral fluids in every instance. However, one of the patients had such prolonged alkalosis that she developed calcium deposits in her corneas that nearly resulted in blindness. In the first case, the diagnosis was made after nearly three years of hospitalization. In the second case, the diagnosis was more readily apparent because we knew about Factitial Metabolic Alkalosis.

This particular condition has undoubtedly existed for years. However, the general availability of electrolyte determinations has created a situation in which the unwary physician, in his search for the obscure causes of metabolic alkalosis, may overlook the most common cause. It is for this reason that we present these two patients.

Case No. 1

The first patient is a 26-year old Negro Airman who had episodes of metabolic alkalosis every 4-8 weeks starting 9 months after his enlistment in the Air Force. The typical episode had an insidious beginning with 1-3 days of malaise and then the development of marked dehydration and loss of 4-8 pounds of weight over a 1-2 day period, not associated with diuresis, diaphoresis or significant vomiting. Subsequently, at the height of the attack, there was slight to moderate crampy abdominal pain and vomiting in small amounts. The laboratory findings consisted of marked hypochloremia down to and below 72 meq./L.; marked alkalosis; carbon dioxide, up to 63 meq./L.; marked azotemia with blood urea nitrogen up to 100 mg.% and over; moderate to marked hypokalemia; potassium 3.3 meq./L., down to 1.8 meq./L. and normal plasma sodium. Only very small amounts of chloride were excreted in the urine, both before and during these episodes, with most 24-hour values being less than 1 gram.

The duration of these attacks varied from 6 to 14 days and recovery was hastened by intravenous sodium chloride and potassium chloride administration; however, spontaneous recovery had occurred with ad libitum eating and drinking.

During the interval periods, he had normal renal function tests, including routine urines, urine concentration tests, BUN, PSP excretion, urea clearance and intravenous-pyelogram. Also the values for the serum calcium, phosphorus, protein, sodium potassium, chloride and carbon dioxide were normal. However, the urinary and fecal excretion of chlorides remained low even when the sodium chloride intake was in the neighborhood of 25-30 grams. An oral Glucose Tolerance Test was flat. Of three barium meals done, one had been normal and two had shown a large atonic stomach, which was interpreted as being due to electrolyte disturbance.

Diagnoses entertained had included Addison's Disease, familial periodic paralysis, potassium and chloride-losing nephritis, and pyloric obstruction.

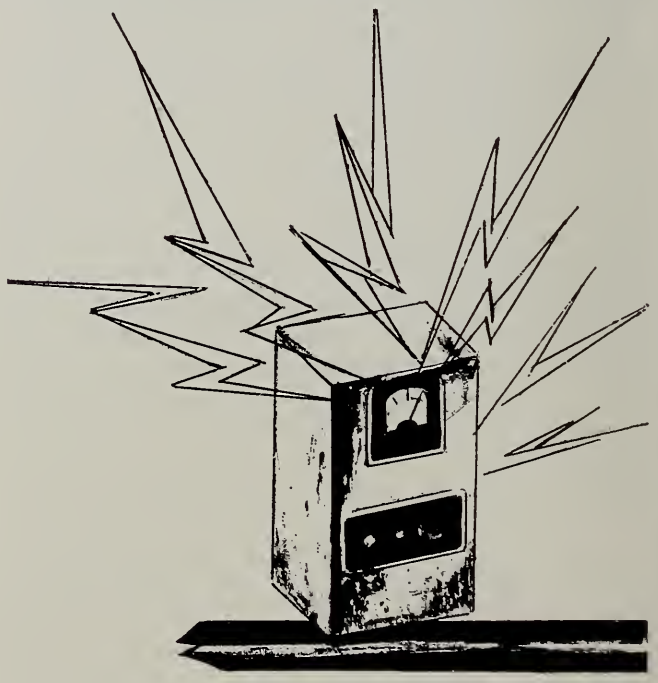
After two years of hospitalization, it had become clear that the basic defect was an unaccounted for large loss of chloride. He was, therefore, transferred to Brookhaven National Laboratory for radioactive chloride and bromide tracer studies.

It was apparent from these space studies that large amounts of bromides were being lost and not accounted for. On measured intake of sodium chloride, the amount of sodium and chloride that could not be accounted for was in the same ratio as the sodium and chloride in his gastric juice. Fifty-eight fasting gastric aspirations varied in volume from 0 to 425 cubic centimeters. These findings, together with radiographic interpretation that this atonic stomach was related to pyloric obstruction, led to the belief that he was secretly vomiting. During his hospital stay, he was observed to vomit only twice and this was after parenteral probanthine administration.

During one of the intravenous bromine 82 studies, the sewer pipes from the ward bathroom were monitored by using a Geiger counter with a constant recorder. The patient first went to the bathroom at 9:30 P.M. Within 10 minutes, the radiation monitor recorded activity so intense that the recorder went off the scale.

It was obvious that this patient had been secretly vomiting during the entire three years of his illness and that simple loss of gastric juice had accounted for his episodes of metabolic alkalosis.

An exploratory laparotomy was carried out in July of 1955 and an annular pancreas found, forming a ring about the duodenum just inferior to and adjacent to the pylorus. This



*From the Medical Services of Central Maine General Hospital, Lewiston, Maine and Brookhaven National Laboratory, Upton, L. I., N. Y.

opening measured about a half centimeter in diameter. A gastrojejunostomy was done. Following this, the patient made a good recovery and was eventually discharged without medical disability from the Air Force at the conclusion of his enlistment.

Case No. 2

The next patient is a 27-year old white female, who was first hospitalized in June of 1959 because of vomiting, malaise and weakness. She stated that on a two-week vacation trip she had become upset and started to vomit and had been unable to retain any food at all. She had lost 15 pounds. On hospitalization, she was found to be markedly dehydrated. The NPN was 60 mg.%; carbon dioxide was 49 meq./L.; chloride was 60 meq./L.; sodium was 142 meq./L.; potassium was 2.4 meq./1. The patient recovered promptly on intravenous saline and potassium chloride. In her convalescent period, a PSP excretion was done which showed 55% excretion in one hour. The patient was discharged with a diagnosis of severe metabolic alkalosis due to vomiting.

Her subsequent course appeared to be satisfactory. She stated that she was eating well, was not vomiting and had gained five pounds. However, because of persistent albuminuria, she was rehospitalized and it was noted that her serum electrolytes showed a persistently low potassium and a high carbon dioxide with a chloride of 95 meq./L. An IVP was normal. Her blood pressure was normal.

She was transferred, for balance studies, to another hospital where a tentative diagnosis of hyperaldosteronism was made. She was discharged on supplemental potassium. Subsequent balance studies, showing a positive potassium balance, ruled out hyperaldosteronism. A diagnosis of severe psychoneurosis, with chronic alkalosis and hypokalemia, due to decreased food intake, was then made.

Despite intravenous fluids and supplemental potassium, she continued to run a high carbon dioxide and began to complain of sore eyes, sore throat, muscle pains and blurring of vision. On ophthalmological examination, corneal opacities, characteristic of calcium deposits, were noted.

During one of her hospital admissions, the patient stated she was eating well and denied vomiting. A barium meal was normal. However, the special nurse in the next room, which was connected to hers by an adjoining bathroom, noted that the patient spent a good part of the night in the bathroom, vomiting. When the patient was confronted with this evidence, she admitted that she had frequently vomited in secret. She stated that her husband was entirely unaware that she had been vomiting. She had on occasion visited at her mother's home, eaten a large meal, including steak, and then gone home and vomited.

The patient has been under psychiatric care and has improved.

Discussion

Both of these patients have presented difficult diagnostic problems. The mechanism of their alkalosis is quite simple, namely persistent vomiting. The difficulty in the diagnosis has been the fact that these patients have persistently denied and hidden their vomiting. Each had a serious contributing disorder, the first, an annular pancreas, the second, anorexia nervosa with vomiting.

However, the first patient delayed correction of his condition more than three years. The second patient delayed appropriate treatment several months and greatly confused the entire problem. She also developed calcium deposits in her corneas, which were secondary to the prolonged alkalosis.

Summary

In summary, two patients with severe metabolic alkalosis due to vomiting have been presented. The alkalosis is factitious in the sense that these patients, by concealing the vomiting, have also concealed the true nature of the alkalosis. The difficulty of diagnosis, unless the condition is suspected, should be readily apparent.

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AMA Annual Meeting To Present Top Program In Atlantic City

The 112th annual meeting of the American Medical Association will be held June 16-20 in Atlantic City.

AMA President George Fister, M.D., said that with "better transportation facilities to Atlantic City and more up-to-date room accommodations, attendance at the '63 meeting should be high."

"Since we last met there," Dr. Fister said, "more than 4,000 new motel rooms have been provided. The auditorium has been renovated, including new escalators and additional floor space. The convention bureau has arranged for a new type of air-land shuttle service between Philadelphia and Atlantic City."

A new feature of the program will be a session on "Physician and Clergy Meet in Patient Care," in which leading clergymen and physicians will discuss their common problems in working with patients. Milford O. Rouse, M.D., of Dallas, is chairman.

David B. Allman, M.D., who practiced surgery in Atlantic City for 35 years and is a past president of the AMA (1957-58), is honorary chairman of arrangements. The local chairman is Charles Hyman, M.D.

The Traymore Hotel and the new Colony Motel will be joint headquarters for the meeting. House of Delegates sessions will be held at the Traymore. Woman's Auxiliary headquarters will be the Chalfonte-Haddon Hall Hotel.

Clinical Application And Evaluation (Tocosamine®) An Oxytocic

THEODORE H. SANFORD, M.D.*

Oxytocics in obstetrical practice, as well as in in-training programs have been in accepted use for many years. During these years, however, experience has demonstrated to the clinician that there is an optimal time for the use of such a drug in the course of labor and delivery, and then only on selected occasions. The conditions under which sparteine sulfate is used and its overall results in labor and delivery, is the purpose of this presentation.

Much has been written on the use and effects of this drug by experts in the field of Obstetrics, from the large medical centers, and their results of tests and observations are documented in the literature. This presentation deals with one person's observations in the conduction of labor and delivery of 156 cases in which sparteine sulfate was used for induction and stimulation of labor without failure (delivery completed within 24 hours of induction or stimulation). Obstetrical indications and precautions have been rigidly adhered to in all cases of use of oxytocic, and when employed in this manner, sparteine sulfate has been shown to be a safe, effective and practical drug.

In approaching this subject, it is felt best to present the contraindications for the use of oxytocics, for it is in this realm that the complications of labor and delivery can be avoided.

CONTRAINDICATIONS FOR OXYTOCICS

1. Cephalopelvic Disproportion — confirmed by X-Ray pelvimetry, or clinical evaluation
2. Multiple pregnancies
3. Grandmultiparity
4. Previous Cesarean Sections or cervical amputations
5. Normal Progressive Labor
6. Abruptio Placenta
7. Placenta Previa (Total or Partial)
8. Prolapsed Cord and/or Vasa Previa
9. Transverse Lie and other malpresentations
10. Floating Presenting Part
11. Obstructive Dystocia, etc.

The primary purpose for the use of oxytocics is to obtain the best possible results for the mother and child, and this should be foremost in the mind of the physician when these drugs are contemplated. The indications for the use should be strictly adhered to or catastrophic results may occur to mother, infant or both.

INDICATIONS FOR USE OF OXYTOCICS

A. To induce labor —

Induction of labor may be indicated in the following situations:

1. Diabetic mother — with close clinical evaluation of size of baby and EDC
2. Erythroblastosis — with viable infant
3. Rh sensitized mothers with rising titers at term
4. Multipara, inducable, at term, with a history of rapid labor and delivery, living some distance from hospital
5. Postmature Infant — with close evaluation of size of baby and EDC, especially in a primipara
6. Polyhydramnios — with viable infant by dates
7. Premature and prolonged rupture of membranes without labor
8. Prevent uncontrolled delivery before hospitalization
9. Prevent anesthetic accidents during delivery
10. Assure constant physician attendance

A "Ripe Cervix" is necessary for successful induction of labor.

1. A cervix in the anterior position and generally soft external os.
2. Cervical dilitation of external os of 2 cm. or more.
3. Soft, pliable internal os of 2 cm. dilitation.
4. Appreciable effacement of the cervix.

If these particular criteria are not present, possible primary failure of induction will result.

An effective method for induction of labor consists of several aspects. First, the criteria for induction must be met. Second, a ripe cervix should be present. Third, the membranes should be stripped if possible with presenting part in easy reach of examining finger. Fourth, if no effectual labor is initiated by this method, within one to two hours, oxytocics may be resorted to, with safety to mother and infant as the important factors in selection of the appropriate drug. Tocosamine, 150 mgm. (one ampoule) is given IM, preferably with the physician in attendance, to closely observe the contractions and determine if the patient is in effectual labor. If such labor is not initiated by the first injection, the same dose may be given IM every hour times four, for a total dosage of 600 mgms. If labor has not been established and maintained by this regimen, the candidate

*From the Obstetrical Service of Central Maine General Hospital, Lewiston, Maine.

was not truly ready for induction, and no harm to the mother or infant will result. If it is imperative to deliver the patient for any major indication listed, another course of Tocosamine may be instituted after an eight to ten hour waiting period, or an IV Oxytocin drip may be used after an eight to ten hour waiting period without fear of synergistic effect. Fifth, an amniotomy may be performed once it is established that the patient is in labor, and the presenting part is past the pelvic brim with close approximation to the internal os. The patient should be well hydrated at all times and uterine contractions evaluated by the attending physician to avert secondary uterine inertia, which might well follow the use of sedatives or narcotics in induced labor.

Having employed Tocosamine for induction of labor by the method outlined in 20,000 cases in the literature, there have been no reported cases of uterine rupture, tetany, post partum hemorrhage, or other major maternal complications attributed to its use, and infant complications are negligible. Tocosamine has been observed to follow most closely the physiologic, rythmical contractions of the uterus, over the other oxytocics available to the medical profession. The mode of administration and the smooth rythmical pattern which the uterus adopts and maintains under the influence of this drug, makes it the drug of choice when induction is indicated, and the above criteria are present.

B. Stimulation of Labor —

Stimulation of labor may be found necessary when uterine contractions decrease in frequency, intensity and duration, resulting in primary or secondary uterine inertia. This situation may occur at any dilitation, station or effacement, regardless of presentation. It is at this time that a complete reevaluation of the patient is made and possible causes determined. Dehydration, infection, CPD, anemia and inanition, obstructive dystocia, fatigue, malpresentation, multiple pregnancy and toxemia must be considered before oxytocics are employed. Again, the drug of choice to restore adequate and effective uterine contractions with a wide margin of safety to mother and infant, is Tocosamine, IM, 150 mgm. Within a few minutes a normal labor pattern is usually restored with one injection, but may be followed every hour times four if indicated, to total 600 mgms.

In recent articles, some side effects have been noted. Persistent uterine tone has been observed in a few cases,[3] and some developed blurring of vision, headaches, and dizziness,[5] but cleared when drug was discontinued. In the cases in which sparteine sulfate has been used by this observer, none of the reactions listed above have been noted. Oxytocics in general, carry with them a certain amount of side reactions, and those attributed to sparteine sulfate are negligable as compared to other oxytocics in use where uterine rupture has been reported.[10,11,12] In well over twenty thousand cases in which sparteine has been used to induce or stimulate labor, no uterine tetany or ruptured uteri has been attributed to this drug, which alone gives it such a wide margin of safety in obstetrical practice.

C. Post Partum Hemorrhage and Uterine ATONY —

These indications for oxytocics demand those that give tetanic and sustained contractions to be effective. Though Tocosamine may increase tone in the post-partum uterus, Oxytocin, Syntocinon®, Ergot, and Methergine® are most effective and time proven. Before the administration of such a powerful oxytocic on the post partum uterus, close evaluation of the uterus should be made to insure the total delivery of products of conception.

Summary

The clinical application and evaluation of sparteine sulfate has been made indicating it to be the oxytocic of choice in inductions and stimulations of labor. It eliminates the use of IV solutions and extremely close observation of contractions without probability of uterine rupture; it may be administered by single IM dosage; has a short induction period; wide margin of safety with freedom of major side effects and overdosage; and induces physiologic uterine contractions.

The indications and contraindications for use of oxytocics have been outlined. The optimal times and occasions for use of sparteine sulfate have been indicated and its compatability with Oxtocin mentioned if a stronger and more potent oxytocic is felt to be of advantage to the mother and infant. Oxytocics for post partum hemorrhage and uterine atony admittedly are the old proven drugs; Oxytocin, Ergot and Methergine.

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1117 Goff Street, Auburn, Maine

The Early History Of The Central Maine General Hospital

Wallace E. Webber, M.D.

I am supposed to talk to you about the early beginning of the hospital. It seems to me it would be good to first discuss somewhat the atmosphere in regard to the profession and the general population and its attitudes toward a hospital. We must remember that the time the hospital was started was only a short while after general anesthesia became popular and the aseptic and antiseptic treatment of wounds. The general idea of the populace was that a hospital was a butcher shop and, of course, the great dread of the people because they had not yet generally recognized the benefits of general anesthesia.

I graduated from medical school in 1895, some five years after the starting of the hospital. At that time, the medical schools graduated about 16,000 doctors a year and the general attendance at school was for two years, although it was beginning to become a three year course. In fact, my class was entered as a two year class but the change took place so that they required us to stay three years, which meant only a term from January to June each year. The tuition at Bowdoin was $80 a year. We saw some minor cases of surgery but actually no observation of sickness in general. Our only knowledge of medicine was what we had in our textbooks and the lectures, which were practically the same thing. A man could go the term in Bowdoin from January to June and then go to Dartmouth from June until January and come back and graduate from Bowdoin the next year, which would only require him to take a year and a half. Practically all of the men were high school graduates. Very few men were college graduates. In my class in school, there was only one college man.

Every small village, practically, had a doctor and, if there was much surrounding territory, they had three or four. Of course, the radius of the doctor's practices at that time was about 15 miles. With a horse he could drive out 15 miles and back, which was a day's work for the horse.

Naturally, with so many men in so small a circle, there was a great deal of jealousy and hard feelings between the doctors and, of course, the patients took part in the quarrels. Fortunately, Lewiston and Auburn had some very good men for their time and they became better with age. Drs. Hill, Wedgwood, Donovan, Sturgis, Peables, and Oakes got together and started to apply for a hospital. St. Mary's Hospital was then in operation and these men at first tried to get an organization in cooperation with St. Mary's; but they found that they would have no control whatever over the finances, nothing to say about it, and therefore they decided to start this hospital. The men signed a note for $15,000 and then began to raise money from the people at large. They bought this land, the so-called Lowell property, on which was a two-story brick house and a larger white house. The operating room was in the top of the brick house, you might call it an attic, and the capacity at that time was about 16 patients.

Dr. Emmons was the superintendent of the hospital and at that time the feeling between Lewiston and Auburn was such that they would appoint a surgeon from Lewiston and then one from Auburn until they had the quota of four, and just the same with physicians. There was no opening for a Lewiston man if the Lewiston positions were all filled until one was appointed from Auburn, and vice versa.

There was good cooperation between the doctors and, when a patient was admitted, the doctors all gathered together, both the surgical and medical staffs, examined the patients, and had a discussion in regard to diagnosis, prognosis, course of action. The general feeling between the men was friendly.

It was difficult to get people to come into the hospital. Very little was known about appendicitis and people who died with it were supposed to have inflammation of the bowel. Typhoid fever was rampant and diphtheria, scarlet fever, measles, and all other contagious diseases were very prevalent.

The operating room was on the third floor, the patients had to be carried on a stretcher up the first flight of stairs by the muscular effort of the men and then there was an elevator run by a hand pulley which would take them up to the operating room.

There were four surgeons, each one serving for two months; and there were supposed to be four adjuncts. But when I came there was only one adjunct, Dr. Williams from Auburn, and, the vacancy being in Lewiston, I was appointed next to him. During the coming year, Dr. Cushman and Dr. John Sturgis were added.

We went through various stages in the matter of sterilization in the operating room. At first, we had nothing but an apron, no gloves, and the sterilization of the hands was in bichloride solution and alcohol. The bichloride solution was an irritant to some, and their hands became sore. After we got our new operating rooms in the East Wing, we had much better equipment. There was one time when we felt it necessary to irrigate all the abdominal wounds; we used gallons of water so that you had to wear rubbers. I have seen the floor half an inch deep with water when we were irrigating the abdomen.

We tried various ways of sterilizing our hands. We

used permanganate of potash at one time. Another time, we had corbolic acid and, after we found out how the alcohol neutralized it immediately, we would dip our hands in carbolic acid and then into the alcohol quickly and, of course, that sometimes made for pretty sore hands. In the early 1900's, rubber gloves became available and then later it was found beneficial to wear masks and so we had caps, masks, and rubber gloves. Soap and water were the best things to clean the wound with and they were used in abundance.

It was astonishing how many patients came in at that time with lice. I have been operating and had Dr. Sawyer stop and pour ether on a spot in the scalp and say "Well, I got that one, Wallace." Cockroaches were a pest at all times.

The first hospital report was for 1891-92. In 1895, I had graduated in June and was appointed an adjunct the following fall. Dr. Ralph Buckman, another classmate of mine, was intern in 1895. Later, he went out to Hollywood and spent the rest of his life there and died a few years ago, leaving me the only remaining member of the class still living.

In 1897, the doctors on both the surgical and medical staffs felt that they spent too much time on duty and decided to enlarge the staffs to six positions, each. Drs. Williams and Dixon became members of the major surgical staff. In 1902, Dr. Hill on account of illness was removed from the major staff and I was appointed in his place. In 1907, Dr. Donovan passed away and Dr. Pierce was put on in his place on the major staff.

In the beginning, for some reason which I never could understand, it was decided that, when a man was on duty, he could not have a private patient in the hospital. That continued until after I became a major, when I raised a rumpus about it and finally won out so that we could have private patients. The directors were influenced in my favor when a patient came up from New Jersey who had been influenced by some Maine-ite, to have me operate on her. It was understood that she was going to be a private patient of mine and pay. I was on duty at the time. When her sister came up about a week later and found out I, being on duty, was not supposed to collect my pay, they refused to pay their bills.

In 1895, we were using silk worm gut in closing all wounds, mostly through and through sutures. Then catgut became available and the only one on the market was a product they wound on spools and put up in a bottle. It was supposed to be sterile. We continued to use it, in fact exclusively, until along in 1904 when we had some cases of tetanus develop. I remember that I had one case and I felt sure that it came from the catgut; but in talking it over with the doctors, for we were all very much interested in it, Dr. Oakes wanted to know if I was taking care of my own horse, which of course I was. About two months later, he had two cases of tetanus and I asked him if he took care of his horse and he allowed he didn't. We then began to use iodized catgut put up by the Physicians and Surgeons. We used that for a long time. Afterwards, of course, there were a number of first class catguts put on the market and a number of different manufacturers have supplied us since. The only fault of chromic catgut was that it had too much chrome in it and it tended to irritate the wound and give us a pus discharge. We had to give it up until they changed the formula and it is now all right to use.

This is a good time to speak of the character of the cases which were received at the hospital. All cases that came into the hospital were almost invariably ruptured appendices as people would not come to the hospital until it was evident that they were going to die without an operation. The great majority of cases were inflammatory and already a large quantity of pus had accumulated. I recall a case of a man about 55-years-old who had an acute appendix and a belly all swollen up and I told him that he could not live unless he had an operation. He refused to go to the hospital or have an operation at home. That night the abscess ruptured into the intestine and he passed two big vessels full of pus. Of course, that was a lucky break for him but the usual case had anywhere from 8 ounces up to 2 quarts of pus in the abdomen from the ruptured appendix. I have already spoken of the time when we were irrigating all cases of pus in the abdomen with normal salt solution and we had two large five gallon jars of normal saline solution; the floor was sometimes nearly a half inch deep with the salt solution as we would run it through the abdomen and out onto the floor and, of course, we had to wear rubbers.

A large number of the cases were pus tubes, one tube or even both tubes, and occasionally the whole abdomen was full of pus where one of them had ruptured. Everything was pus and we expected it all the time in all cases. We had, of course, no antibiotics and no knowledge of anything which would help us save the patient when they were thoroughly infiltrated with pus and they often died of general peritonitis.

There were huge growths in the abdomen. I remember one patient who had two large fibroid tumors combined with both tubes full of fluid so that we drained off the fluid into a tub on the floor. The patient weighed 180 pounds when we started and, when we had removed all the fluid and fibroids, she weighed 80 pounds.

We had many peculiar accident cases as you might call them. I remember one patient who had pushed a six foot clockspring through the urethra into the bladder, clear out of sight. It was near enough so that I could get hold of the end of it with an alligator forcep and pull it out. Another patient fell on a picket fence, drove a picket into the bladder, and pushed a two-inch-square torn out of his pants into the bladder.

Of course, we had cancer cases as they do today but comparatively few in proportion to the inflammatory cases.

At that time, there were six quack doctors in the

city doing nothing but abortions and, of course, invariably that was a question of infection; the patients died with a general peritonitis as a result. We saved a great number of those cases by gently curetting with a dull curette and then packing the uterus with iodoform gauze for 24 hours.

Placing a lot of drains in the wound and leaving them nearly wide open saved a lot of other cases that had a general peritonitis. Nature was very good to us.

Cases of obstruction of the bladder from the prostate gland were relieved with a catheter or with a suprapubic puncture into the bladder and, of course, it was a number of years before it was thought proper to remove the prostate gland. At the time we began to remove the prostate gland, it was a very serious matter and approximately three out of five would die. We operated immediately to remove the prostate without any previous drainage of the bladder. Later, we came to drain the bladder with a catheter for two or three days before operation and that made the operation of removing the prostate comparatively safe.

At first, the nurses were trained particularly in the care of the patient. They also, of course, had anatomy and physiology but they did not have as they do now a semi-medical education. They worked long hours and had a truly missionary feeling about their work. They used to go out with me on operations and all alone take care of the patient without relief for three or four days and then stay on with the patient until he was on his feet. I think one case which I had will illustrate the feeling of the nurses toward their work.

I had a case back in the country where I carried a nurse, getting there after dark. The place was a pigpen. I wouldn't even drink a glass of milk. The patient had double pus tubes and the abdomen was full of pus. When I finished the operation, I told the nurse that I knew nothing about the home conditions before I got there and that personally I wouldn't stay there overnight; I would take her back with me if she wished me to. She said it was her duty to stay there and take care of the patient, which she did; fortunately, the patient recovered.

Other cases where I had nurses with me were not as bad as that, but they had to assume the whole care of the patient and were on duty for 24 hours a day. After the patient was a little better, they often did a large part of the housework along with taking care of the patient.

In those days, the nurses were not made into semi-doctors by telling them or having them learn all the symptoms of the different diseases and therefore being skeptical oftentimes of the doctor taking care of the patient. I know a number of cases that have come to my knowledge in which the nurse has criticized the doctor very freely in regard to his treatment when she was talking with the patient and thereby destroying the patient's confidence in the medical care she was getting. I firmly believe that a little knowledge is dangerous and that the nurses should not be instructed in regard to the symptomatology and treatment of diseases. She will learn by observation of her own patients, what symptomatology it is necessary for her to know. She will not be so critical in regard to the care that the doctor may be prescribing for the patient.

I know that Dr. Lahey was greatly distressed by the attitude of the nurses and felt that their education was not altogether proper. He regretted that so much energy was used up in the education of the nurse along medical lines rather than along the lines of patient care. Of course, conditions have changed a great deal and now all the nurses wish to have their patients in the hospital and rarely go out on home care.

People began to appreciate the hospital and not have fear of it so that we began having patients who were not in extremis when they entered. The demand for more and more beds, of course, was very persistent. In 1915, the Center Building was sent up into the air, adding a number of beds; in 1930, the West Wing was built. I had been trying for some time to get a medical school in Maine and George Treat from Livermore offered to put in $10,000 to start it off. He also was acquainted with Ford and a lot of financiers and was going to take me around to them to see about raising money for the school. I was acquainted with Mrs. Woolworth at the time and interviewed her a couple of times. She was much interested and undoubtedly, had she lived and the thing gone through, she would have put in a reasonable sum towards it. Unfortunately, the depression hit us at that time and knocked us out for a number of years.

Meanwhile, I had interviewed Dr. Gehring of Bingham several times regarding an addition to the hospital as I was well acquainted with him and had patients from him. He was much interested and willing to start adding to the hospital, particularly if we would put in a floor for obstetrical cases. The directors had been trying to get their hearing before the Bingham heirs and they couldn't get to first base. They learned that I had influence there and asked me if I would go up and interview Dr. Gehring, which I did, with the result that we obtained something over $300,000 to build the new wing.

The hospital had been constantly growing and adding new beds all of the time until now we have a wonderful hospital; but, of course, we have got to keep on growing just the same.

I have leaned heavily toward the surgical side of the hospital. The medical staff was doing just as good work on their side. We now have a staff on the medical side that is equal to any, I feel sure, of any similar hospital anywhere in the East.

This has been a rather sketchy review. You know that it is the fault of old men to like to reminisce in regard to things that have passed, and I thank you for giving me the opportunity to talk to you in regard to my knowledge of the past.

297 Main Street, Lewiston, Maine

Renal Angiography

Richard N. Goldman, M.D.*

Renal angiography is a phrase that implies selective aortography; the instillation of a radio-opaque substance into the renal arteries via the aorta. In addition to the visualization of the main renal arteries, one is able to observe the smaller renal vessels and the eventual excretion of the dye by the kidney.

Many applications for this procedure exist:

(1) Renal angiography is one of the most useful tools in the evaluation of individuals with possible renal hypertension secondary to renal artery occlusion. In addition to the intravenous pyelogram, split renal function tests and radio-active renograms, the actual demonstration of the main renal arteries, its branches and renal parenchyma offers invaluable information as to the presence of vascular obstruction causing hypertension.

(2) The ultimate differentiation of a renal cyst from a renal neoplasm is by surgical exploration. However, operative approach can be strongly influenced by preoperative information regarding a lesion. Renal angiography will often aid in the evaluation of a filling defect demonstrated by intravenous pyelogram and retrograde studies. Cysts are characteristically avascular. Most renal neoplasms will be quite vascular and often have abnormal puddling, laking or staining of the dye at the tumor site. About 5% of tumors will have avascular areas either due to necrosis of tumor, compression or thrombosis of small arteries supplying the tumor.[1] Papillary lesions of the renal pelvis will not be well demonstrated by angiography.

(3) Evaluation of anomalies: Agenesis, hypoplasia and polycystic kidneys can all be well demonstrated with renal angiography. If one is evaluating a small kidney that either does not function or functions poorly by intravenous pyelography, renal angiography may demonstrate a small arterial supply which would be more consistent with hypoplasia versus a contracted kidney that has a reduced mass secondary to pyelonephritis which may have normal size major vessels.

(4) A hydronephrotic kidney, secondary to congenital uretero-pelvic obstruction, may not function by the usual measurements, i.e., intravenous pyelogram. A renal angiogram may demonstrate a good vascular supply and thick cortex that would imply a salvagable kidney.[2]

Techniques

At the present time, two methods are commonly used for renal angiography: trans-femoral and trans-lumbar. This author prefers the trans-lumbar approach. The trans-femoral method, however, is excellent for pediatric work and in those patients who cannot safely be anesthetized.

A general anesthesia with endotracheal intubation is employed for the trans-lumbar technique. The patient is placed in the prone position with the lower abdomen over a compression block. Following preparation of the left posterior flank and draping this field, a 17 guage, thin-walled, six inch needle (A.S. Aloe Company, Boston, Mass.) is inserted into the aorta at a predetermined level. This is accomplished by study of previous films, including an intravenous pyelogram. The ideal location of needle insertion is at the aortic level parallel to or immediately below the renal artery take-off. Higher position may cause filling of the superior mesenteric, splenic or celiac axis arteries which may interfere with visualization of the renal vessels below.

A definite 'give' is experienced as one enters the aorta. The blood flow magnitude will vary directly with the patient's blood pressure at the time of entry. It should be pointed out that improper subintimal positioning of the needle tip may yield a good blood flow.

A test dose of dye, 4-5 cc., is then rapidly injected. This film must be seen before proceeding any further. Improper needle position is one of the causes of morbidity in this procedure and *can* be prevented. If needle position is not satisfactory, one should either reinsert the needle or terminate the procedure.

When needle position is deemed satisfactory, a pressure belt over the patient's lower back is tightened to insure localization of the dye bolus to the upper abdominal aortic area. This decreases the amount of dye needed. Recently, we have been using Diatrizoate Methylglucamine, 60% (Renografin,® Squibb) with complete satisfaction. Ten cubic centimeters are injected rapidly and a film is taken almost immediately after the completion of injection. This usually demonstrates the main renal arteries. Repeating this procedure, with delay of film taking, will yield good pictures of the smaller renal vessels as well as a nephrogram phase which is helpful in searching for renal infarcts.

The post-operative care of these patients includes absolute bed rest for 24 hours, encouraging a high fluid intake and rechecking the hematocrit and hemoglobin on the following day.

In a personal series of over 40 angiograms, the author has not encountered any morbidity or mortality. Other series of much greater numbers have also been free of complications with this technique.[3]

Complications

The complications from aortography or renal angiography are for the most part preventable.

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FIG. 1

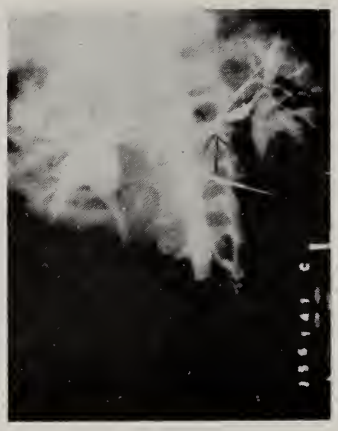

FIG. 2

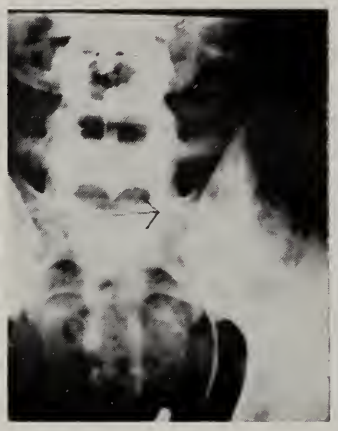

FIG. 3

FIG. 4

(1) Complications from improper position of the needle: This can be avoided by the religious use of the test dose and study of this film prior to larger injections. If this caution is not exerted, sub-intimal aortic injections and dissection, overloading small vessels such as the renal artery or superior mesenteric artery with subsequent organ damage, will occur.

(2) The other group of complications are secondary to the use of relatively toxic dyes in large amounts. The newer triiodinated compounds are less toxic than older dye materials. Also, the use of abdominal compression eliminates the need for larger amounts of dye. On the average, satisfactory films are obtained with about 10 cc. of dye.

Killen and Foster,[4] in a discussion of spinal cord injuries secondary to aortography, list several measures to prevent such complications. They include most of the measures that are incorporated in the trans-lumbar technique discussed above.

Illustrative Cases

Two hypertensive cases are shown, the hypertension secondary to renal artery obstruction. Fig. 1 demonstrates the angiogram of a 38 year old white male with hypertension of about two years duration. Note the post-stenotic dilatation in the left renal artery. Split renal function tests revealed poor left renal function. Exploration revealed the arterial obstruction in addition to a contracted, scarred kidney which was removed. The blood pressure levels returned to normal.

Fig. 2 is the angiogram of a 42 year old, hypertensive, white male, demonstrating narrowing of the left renal artery immediately before its bifurcation. Exploration revealed stenosis at this point with significant difference in arterial pressures before and after the block. The treatment was endarterectomy and venous patch graft.

Fig. 3 demonstrates the left retrograde pyelogram of a 38 year old white male presenting with left flank pain and no left side function on his intravenous pyelogram. It was not possible to pass the catheter beyond this point. Fig. 4 is the renal angiogram on this patient and demonstrates an hypertrophied right kidney with a small hypoplastic left renal artery. Exploration revealed a hypoplastic left kidney with no connection to the ureteric outgrowth inferiorly.

Summary

Renal angiography is a useful tool in the evaluation of hypertensive patients, the differentiation of renal cysts and neoplasms and the diagnosis and evaluation of renal anomalies. Performed with caution, the procedure is safe. Several illustrative cases are presented.

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185 Webster Street, Lewiston, Maine

A Page For Your Calendar

○ JUNE ○ 1963 ○	Sunday 23	Reserved for 110th ANNUAL SESSION of the Maine Medical Association at The Samoset Rockland, Maine Tel. 594-8411
	Monday 24	
	Tuesday 25	

Specialty Group Meetings During 110th Annual Session

Maine Eye Group

Maine Thoracic Society

Maine Trauma Committee

Maine Radiological Society

Maine Society of Obstetrics and Gynecology

Maine Chapter, American College of Surgeons

Maine Chapter, American Academy of Pediatrics

Maine Chapter, American Academy of General Practice

Maine Medico-Legal Society

Maine Society of Anesthesiology

Maine Society of Clinical Hypnosis

Maine Society of Internal Medicine

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Physical Rehabilitation Of Children*

JOHN J. LORENTZ, PH.D., M.D.**

Physical rehabilitation of children is a misnomer, for in fact, all efforts directed to handicapped children are aimed at their habilitation and are not restricted to the physical aspects alone.

Statistically, there are six million handicapped individuals under 21 in the United States which is equivalent to one in every two hundred live births which result in brain damage of some type. Of said six million handicapped, blindness, deafness, cardiac disabilities, tuberculosis, and amputations — congenital or acquired — constitute what may be called single-system diseases and, en toto, contribute less in numbers than do the neuromuscular dysfunctions — with or without mental retardation and speech and visual defects — the latter category constituting multiple-system diseases.

Mental retardation — defined perhaps as that of intelligence present in individuals with an IQ under 70 — has been freely discussed and poorly understood and is found in approximately 53% of those under 21 with neuromuscular disorders. In the past year's experience at the Hyde Rehabilitation Center, an alarming number of children and teen-agers were admitted with a presenting diagnosis of mental retardation of whom only 16% were proven to be retarded after careful and thorough psychological evaluation.

Children who have neuromuscular dysfunctions should not be compared against the standards achieved by normal children; nor measured by the physical and mental attainment of the latter; nor anticipated to show gain with treatment techniques planned for normal children and adults. Preventive measures should be directed to the soft tissues to prevent contractures, faulty structural alignment, and muscular imbalance — when dealing with a neuromuscular disorder — and preventive and on-going measures should include consideration of the psychosocial and educational adjustment of such patients, their families and the community, with full use and exercise of community resources.

In his presidential address, Dr. M. A. Perlstein, Professor of Pediatrics at Northwestern University Medical School, stated, as he assumed the top position in the American Academy of Cerebral Palsy: "For decades the cerebral palsied patient was a neglected and forgotten child. Today only few such who can benefit from care go without it. The outlook in the field of cerebral palsy has undergone a marked change from the pessimistic one of 20 years ago to the optimistic one of 5 to 10 years ago to a realistic one now. From the fallacious impression that nearly all cerebral palsied persons were idiots, the pendulum swung entirely to the delusive belief that most of them were unusually intelligent. Now it is moving back to a sober view that although approximately one-half of the cerebral palsied may be mentally deficient, there are enough who can be helped and habilitated to justify the efforts in their behalf."

It is frequently difficult to establish goals which are reasonable and practical for the cerebral palsied youngster and which are acceptable to the patient and his family. Dr. Perlstein said that it has been found that the social and economic status of the cerebral palsied patient has much to do with his eventual emotional adjustment. Thus, for many whose handicap is aggravated by emotional factors, the farm is the best place for rehabilitation since one's physical appearance is not important in the barnyard or field. Moreover, chickens fed mash by a severe athetoid, lay eggs as good as those fed by a physically fit athlete.

The etiology of the syndrome known as cerebral palsy is as varied as the types of cerebral palsy met in practice. In effect, these may be broken down into prenatal, natal, and postnatal etiological factors. In the former, hereditary conditions such as Tay-Sachs' disease, or congenital defects resulting from anoxia, maternal infections and maternal metabolic disease — including the RH factor — are commonly met with. At the time of delivery, anoxia through mechanical obstruction on the cord or mechanical respiratory obstructions resulting in asphyxia, with or without prematurity, are recognized contributors to brain damage. In the postnatal phase, trauma, infection, vascular phenomena, and neoplasms are frequently identified.

Dr. Hans Zellweger, Professor of Pediatrics at the State University of Iowa College of Medicine, stated: "Whoever faces the obligation of defining the term cere-

*Abstract of an address on the same subject by Dr. Lorentz at the 14th Annual Pediatric Institute for the General Practitioner, September 28, 1962, Central Maine General Hospital, Lewiston, under the sponsorship of the Division of Maternal and Child Health and endorsed by the Maine Medical Association.

**Medical Director, Hyde Rehabilitation Center, Bath, Maine.

bral palsy, which should be taken as descriptive only, will encounter difficulties because of the multitude of signs and symptoms to be found occasionally in the condition. These are, among others, mental retardation; soft-tissue defects; sensory defects; personality disorders; different types of seizures and convulsions; a tendency to disturbances of the electrolyte balance; and a tendency to neurotrophic complications during the course of other, usually not too serious, conditions."

Classifying the cerebral palsied is difficult and to date not completely satisfactory. There are some six types: the first, spastic; the second, athetoid; the third, rigid; the fourth, tremulous; the fifth, ataxic, and the last mixed. It is the latter that is most frequently seen, for the "pure-typed" exists less frequently without the presence, to some degree, of one or more of the other types. Dr. Bronson Crothers stated in 1937 that "the etiological diagnosis is a treacherous guide to prognosis. Mere appraisal of the defects is not enough. The patient, the family, and the school need an appraisal of assets with less emphasis on defects."

Problems to be recognized in dealing with the cerebral palsied are some seven in number. The first is ambulation, which constitutes a problem in better than 90% of the cerebral palsied. The second is mental retardation, which is present in between 50% and 60% of the cerebral palsied. Speech defects, which are noted in 55% to 75% of the cerebral palsied in some degree; hearing defects which are present in approximately the same number; seizures which are seen in 30%; visual problems which involve strabismus in approximately 50% of the cerebral palsied and decrease in visual acuity in 8%; and finally, longevity, which from studies conducted in the Scandinavian countries, indicates that the life span is less than among normals of given age and sex.

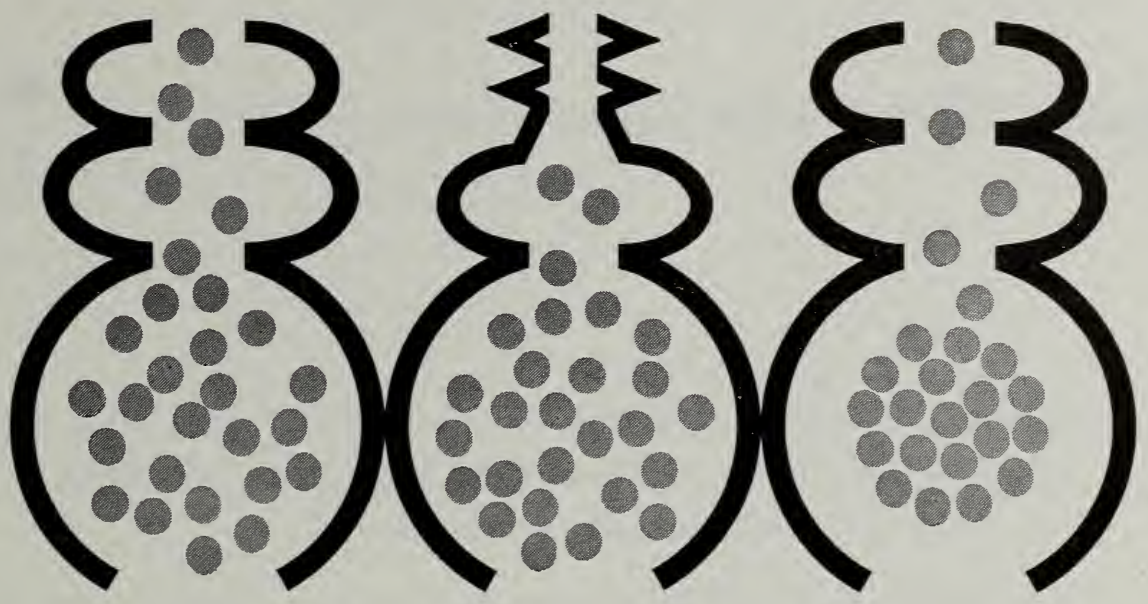
Pathological studies have shown no true correlation between the size of a lesion and the type of involvement, whether it be spastic, athetoid, rigid, etc. There is also no true correlation between the extent of brain damage and the extent of manifestations of the neuromuscular imbalance.

The problem of habilitating with cerebral palsy starts with a proper evaluation of the patient and the family and the total environment. At this time, immediate, and to a cautious point of degree, remote aims can be formalized. In recent years the neurophysiological approach predicated on the brain as the site of the injury and based on the principles of relaxation by the use of synergies as the basis of inhibition of reflexes and the proper auxiliary use of bracing has gained importance in the treatment of the cerebral palsied. There are, however, as many systems as there are writers, and advocates of said systems. Perlstein states: "the system I use is that I steal anything from any other system that works." In addition, surgical approaches to the nervous system itself or to the extremities are important; and the treatment regimen should be coordinated with a multidisciplinary approach. Either of the above must usually be complemented by orthetic measures which in brief consist of static and/or dynamic bracing, recognizing that one can over-brace or under-brace. None of these measures is entirely successful without a consideration of the psychological aspects of the disease, the presence of speech, hearing and visual defects, and the need for early and continued physical therapy and occupational therapy, as well as the immediate introduction of the medical social worker into the problem. Some types of drugs have been useful though unfortunately, over-publicized and under-researched, but do offer hope that pharmacological measures will prove helpful in the future.

In setting up aims for habilitation or rehabilitation of the cerebral palsied, consideration should be given to the spectrum of capabilities. This has been described as "the process of growing from an infant to an adult, which is a difficult one and complicated at all levels of physical, mental, emotional and social difficulties." The greater the extent of brain damage, the more true is the above quotation. One should always be on the alert for hidden disabilities and for social rejections, for the patient may be more handicapped by social rejections than by the primary physical disability. The cerebral palsied present what has been described as "a galaxie of difficulties" — such as the loss of motor control, sensory defects, etc., — and this has caused a dichotomy in the approach, one theory being "do-something-or-anything" versus another theory of "little-or-nothing-can-be-done."

Today there is a great battle going on between the "central approach" versus the "peripheral approach," the central approach being predicated on the fact that neuromuscular disease arises from involvement of the central nervous system and supposes that by salvaging the neuromuscular units and putting them back to work — particularly at the cortical level — greater success will be obtained than will be the case in the "peripheral approach" which is simply orthopedic surgery and bracing.

The future treatment of the cerebral palsied will undoubtedly lie in a careful evaluation of the needs of each individual and the utilization of the neurophysiological approach; proper and continued bracing — changing the latter as the circumstances demand — coupled with the modalities of physical and occupational therapy; introducing surgical procedures when and if necessary; and treating the individual as a whole, as a member of a family, and as a member of a social unit. This is then the comprehensive habilitation or the comprehensive rehabilitation of the cerebral palsied.



lowers motility | relieves cramping | stops diarrhea

LOMOTIL® Antidiarrheal tablets and liquid

(brand of diphenoxylate hydrochloride with atropine sulfate)

Traditionally the most effective means of slowing excess intestinal motility in diarrhea and so of relieving the disorder have been the opium derivatives. Now Lomotil makes available an antidiarrheal agent[1] of greater therapeutic efficiency than morphine.

By controlling hypermotility, the basic mechanical dysfunction of diarrhea, Lomotil reduces the frequency and fluidity of stools, diminishes cramping and controls diarrhea in many patients in whom other drugs have proved inadequate.

In a recent clinical report Cayer and Sohmer[2] state: "The alleviation of symptoms [with Lomotil] was usually prompt, occurring within 24 to 72 hours even in the long-standing chronic cases. . . . A surprisingly satisfactory response was obtained in 75 per cent of the patients with regional enteritis and in 63 per cent of those with ulcerative colitis, all of whom had failed to respond to other measures."

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Detailed information and directions for use in children and adults are available in Physicians' Product Brochure No. 81. G. D. Searle & Co., P. O. Box 5110, Chicago 80, Illinois.

1. Janssen, P. A. J., and Jageneau, A. H.: A New Series of Potent Analgesics: Dextro 2:2-Diphenyl-3-Methyl-4-Morpholino-Butyrylpyrrolidine and Related Amides. I. Chemical Structure and Pharmacological Activity, J. Pharm. Pharmacol. 9:381-400 (June) 1957.
2. Cayer, D., and Sohmer, M. F.: Long-Term Clinical Studies with a New Constipating Drug, Diphenoxylate Hydrochloride, N. Carolina Med. J. 22:600-604 (Dec.) 1961.

G. D. SEARLE & CO. *Research in the Service of Medicine*

Maine Heart Association Notes

Use Of A Low-Sodium Formula As An Improved Karell Diet, With Emphasis Upon The Outpatient Management Of Heart Failure And Lymphedema

"The dietetic management of patients who have congestive heart failure . . . . . continues to pose a problem for the clinician.

'A food formula (Metrecal) has been successfully employed as a sole or major source of sodium and calories in the management of 17 patients with congestive heart failure and 3 patients with lymphedema. This preparation supplies 900 mg. of sodium, 70 Gm. of protein, and 900 calories per quart.

'The advantages of this diet over other low-sodium regimens . . . . . include the following: (1) Its palatability, convenience, and relatively low cost; (2) the insuring of an adequate intake of protein, calories, vitamins, and minerals; (3) the minimizing of postdiuretic asthenia; . . . . . (8) its effectiveness as an outpatient dietetic regimen; . . . . . (9) the significant reduction in hypercholesterolemia; (10) its effectiveness in initiating long-term weight reduction when the patient is obese as well as edematous."

(Am. Ht. J., Vol. 65, pages 32-49, 1963)

County Society Notes

KENNEBEC

February 21, 1963

A meeting of the Kennebec County Medical Association was held at the Pioneer House in Augusta, Maine on February 21, 1963.

Drs. Hemendra N. Bhatnagar, Waterville and John C. Patterson, Augusta were elected to membership.

Dr. H. C. Huntley, Regional Health Director for the United States Public Health Service, Region I, presented the clinical portion of the program. He discussed "The Problems of Emergency Health Services as Related to Hospitals." Dr. Clyde I. Swett, Medical Advisor to the Civil Defense Program for the State of Maine, was also a guest and described in some detail the Civil Defense Program here in the State. The medical self-help training programs were discussed and hospital disaster planning was demonstrated in a film.

March 21, 1963

The Kennebec County Medical Association held its monthly meeting at the Jefferson Hotel in Waterville, Maine on March 21, 1963.

Alexander A. Boytar, M.D. of Augusta, Maine was elected to membership.

Charles E. Towne, M.D. noted that an amendment to Section 93 RS, C, 112 was before the 101st Legislature. Following considerable discussion, a proposal that a letter be sent from the Association to all senators and representatives in our county was approved.

Dean H. Fisher, M.D. presented his views on some of the problems in the implementation of the Kerr-Mills law. George J. Robertson, M.D. stated that he felt that the blame for inadequate health care of the aged had been mislaid at the door of the doctors. He feels that the Department of Health and Welfare is now trying to work out a program for improved care on grossly inadequate funds and, if the care is inadequate, it is up to the citizens and their legislator to provide for the improvements.

Dr. Price Kirkpatrick, the consulting phychiatrist for the Kennebec Valley Mental Health Clinic, presented the clinical portion of the program in discussing the management of psychosexual problems. Dr. Kirkpatrick said that the longer a symptom is present, the more difficult the underlying disease is to treat, so that early management is necessary. He said that the Mental Health Clinic has as low a fee for service as possible, and that by making use of a referral and pre-admission form to be filled out by the referring physician, the professional time spent in interviewing is markedly reduced. There is only a two-week waiting list at a time when most clinics throughout the rest of the nation have waiting lists of from eight to ten months. The type of patient best helped at this Mental Health Clinic is usually the acute crises, i.e., school drop outs, marital upsets, and potential suicides. Dr. Kirkpatrick then reviewed some of the basic symptoms and complaints of psycho-sexual disturbances and briefly outlined their treatments.

EARLE M. DAVIS, M.D.
Secretary

AROOSTOOK

March 6, 1963

A meeting of the Aroostook County Medical Society was held on March 6, 1963 at the Plymouth Hotel in Fort Fairfield, Maine during a severe snowstorm.

Drs. Lewis V. A. MacDonald, Washburn and George M. Berberian, Van Buren were elected to membership in the society.

CLYDE I. SWETT, M.D.
Secretary

YORK

March 13, 1963

Twenty-six members and four guests attended the York County Medical Society meeting which was held at the Webber Hospital in Biddeford, Maine on March 13, 1963.

The meeting was called to order by the President, James S. Johnston, M.D., following a social hour and dinner.

A discussion concerning Civil Defense was followed by a vote to write to the County Chairman, stating that the society feels that the whole structure of Civil Defense in York County is deteriorating.

Mr. Richard Nellson of Portland, Director of Blue Shield, discussed Blue Cross-Blue Shield which was followed by an interesting question and answer period.

CHARLES W. KINGHORN, M.D.
Secretary

PENOBSCOT

March 19, 1963

The March meeting of the Penobscot County Medical Society was held at the Tarratine Club in Bangor, Maine on March 19, 1963 with 40 members and guests present. Allison K. Hill, M.D., President, presided.

Dr. George Mitchell, Jr., Chairman of the Department of Gynecology and Professor of Obstetrics of Tufts Medical School, was the guest speaker. He spoke on his recently published findings concerning the value of skin Homografts done during pregnancy on women who were frequent aborters. A question and answer period followed. His talk was well received, thought provoking, and considerable discussion was enjoyed.

The business meeting was concerned with the review of various communications received from the A.M.A. and the M.M.A.

FREDERICK C. EMERY, M.D.
Secretary

CUMBERLAND

March 21, 1963

Seventy-three members and guests were present at the Cumberland County Medical Society meeting, which was held at the Eastland Motor Hotel in Portland, Maine on March 21, 1963. After a social hour and dinner, the meeting was called to order by the President, Philip P. Thompson, Jr., M.D.

Drs. Harold N. Burnham, Gorham; John A. Godsoe and Robert M. Morrison, Portland; Nina B. Rubins and Talivaldis Rubins, Steep Falls were elected to membership in the society.

The obituaries of Dr. Harry E. Davis and Dr. John R. Hamel were read and it was voted that these be spread on the minutes of the society and copies sent to the families.

Thomas A. Martin, M.D., Councilor for York and Cumberland counties, reported on the recent A.M.A. Symposium on Legal Medicine which he recently attended in Florida. He also discussed the two bills in the State Legislature which have im-

port for the medical profession, namely, 1) extension of the Statute of Limitations on Actions for Malpractice of Physicians from two to six years and 2) permitting the Chiropractors to practice under the Industrial Accident Law. He urged all physicians to contact their senators and representatives and urge them to vote against these bills.

The remainder of the meeting was devoted to a panel discussion of how city government helps its older citizens. This was moderated by the Portland City Health Officer, Dr. Boris A. Vanadzin. The members of the panel were: Matthew Barron, Welfare Officer of Portland and Director of the Portland City Hospital; Bernard Campbell, Portland Director of Parks and Recreation; George Mulligan, Director of the Housing Authority of Sagamore Village and Clyde Bartlett, Principal of the West School, member of the South Portland City Council. The causes of both private enterprise, city, state and federal government were pleaded by the members of the panel in the course of their presentations and the discussion became quite lively and spirited in the course of the rebuttal.

ALBERT ARANSON, M.D.
Secretary

New Members

FRANKLIN

W. Dean Pope, M.D., 6 Pleasant Street, Rangeley

HANCOCK

Morris A. Lambdin, M.D., Maine Coast Memorial Hospital, Ellsworth
Elihu York, M.D., 194 Main Street, Bar Harbor

KENNEBEC

Hemendra N. Bhatnagar, M.D., Thayer Hospital, Waterville
Alexander A. Boytar, M.D., Box 724, State Hospital, Augusta
John C. Patterson, M.D., Box 724, State Hospital, Augusta

PENOBSCOT

Robert F. Gloor, M.D., Box 136, Pleasant Street, Corinna

YORK

John P. Lannin, M.D., 120 Main Street, Sanford

Necrologies

HARRY E. DAVIS, M.D.

1894-1963

Harry E. Davis, M.D. of Falmouth Foreside, Maine died on February 12, 1963. He was born in Portland, Maine on November 6, 1894, son of Israel and Rose Davis.

Dr. Davis graduated from Portland High School and Tufts College and received his medical degree from Tufts College Medical School in 1919. He interned at the Chelsea Memorial Hospital in Massachusetts from 1918 to 1919, was a resident at the Children's Hospital in Washington, D. C. from 1920 to 1921, and did postgraduate study in the Children's Division of the Bellevue Hospital, New York City.

Dr. Davis practiced in the Portland area for nearly forty years. He was chief of the pediatrics service at the Mercy Hospital and a member of the executive committee of the medical staff and was elected to a term as staff president in 1958. He served as a courtesy staff member at the Maine Medical Center.

He was a member of the Cumberland County Medical Association, Maine Medical Association, American Medical Association, New England Pediatric Society and the Portland Medical Club. He was also a member of Temple Beth El, the Jewish Community Center and Phi Delta Epsilon.

Surviving are his widow, the former Sadie Solovich of Bath; a daughter, Mrs. John Klingenstein, Greenwich, Connecticut; a brother, Maurice Davis, Portland, Maine; a sister, Mrs. Tina Etskowitz, New York City; three grandchildren and several nephews.

ALBERT D. FOSTER, M.D.

1875-1963

Albert D. Foster, M.D. of Rochester, New York died on February 14, 1963. He was born in Detroit, Michigan on February 13, 1875, son of Edward Dwight and Marion Langley Foster.

Dr. Foster graduated from Detroit Public High School in 1895 and received his medical degree from the University of Michigan Medical School in 1899. That same year he entered the government service at the Marine Hospital in Cleveland, Ohio. He later served in hospitals in the United States and overseas and came to Portland, Maine in 1935 as medical director of the Marine Hospital, a position he held until his retirement from the U.S. Public Health Service in 1938. He was health officer of the city of Portland from 1946 until 1950 and moved to Rochester, New York in 1960.

Dr. Foster was an Honorary member of the Maine Medical Association and Cumberland County Medical Society, receiving a 50-year medal in 1949, a 55-year pin in 1954 and a 60-year pin in 1959. He was also a member of the American Medical Association, the Association of Military Surgeons of the United States and a Fellow of the American College of Physicians.

He is survived by two daughters, Mrs. Alfred L. Gibson, Williams, California and Mrs. Robert L. Berg, Rochester, New York; two sons, Dr. Albert D. Foster, Jr., Hollywood, California and Dr. Theodore T. Foster, Wilmington, Delaware.

HENRY W. HANSON, JR., M.D.

1897-1963

Henry W. Hanson, Jr., M.D. of Cumberland Center, Maine died on March 17, 1963. He was born in Bath, Maine on May 19, 1897, the son of Henry Wallace and Margaret H. Love Hanson.

Dr. Hanson graduated from Morse High School and Bowdoin College and received his medical degree from Yale University School of Medicine in 1922.

He interned at the Maine General Hospital and practiced in Portland, Maine, moving to Cumberland Center in 1924 where he practiced until his retirement three years ago.

Dr. Hanson was a member of the Maine Medical Association, Cumberland County Medical Society, Portland Medical Club, Bowdoin Club and Solar Lodge, AF and AM of Bath.

Surviving are his widow, Mrs. Ruth E. Hanson; one daughter, Mrs. Robert E. Atwater of Rockville, Connecticut; one brother, James B. Hanson of West Poland; two sisters, Mrs. Norman W. Hulit of Cumberland and Mrs. George B. Weatherbee of Birmingham, Michigan; one grandson.

News, Notes and Announcements

New England Health Education Association Eastland Motor Hotel, Portland, Maine May 2-3, 1963

Theme: *Controversy in Public Health*

May 2

9:30 A.M.	Registration — Coffee
10:00	*How We Handled Controversy* — an idea exchange
11:45	Luncheon
1:30 P.M.	*How We Provoke Controversy or Misunderstanding* Godfrey Hochbaum, Ph.D., Chief, Behavior Science Section, U.S.P.H.S.
3:00	*Controversy on a Panel* — or vice versa
5:30	Social Hour
6:30	Banquet *Current Controversies in Public Health* Frederick J. Stare, M.D. Harvard School of Public Health

May 3

9:45 A.M.	To Be Announced
10:15	*Putting the Health Message Across* Michael Palko, M.P.H., Information Division, Dept. of Health and Welfare, Ottawa, Canada
11:00	Business Meeting
12:00	Luncheon

New England Pediatric Society

The New England Pediatric Society will meet in Kennebunkport, Maine at the Shawmut Inn on Wednesday, May 29, 1963. Scientific papers will be presented in the afternoon and Dr. Leonard W. Cronkhite, Administrator, The Children's Hospital Medical Center, will be the featured speaker. Any physician interested in attending this pediatric meeting is welcome.

Dr. Betts Named Diplomate by American Board of Pathology

Anthony Betts, M.D. of Brunswick, Maine was recently named a Diplomate of the American Board of Pathology.

This certification is given after a pathologist has met the highest standards of the medical specialty of pathology, with a minimum of 4 years of training and experience after obtaining his M.D. degree.

Cancer Seminar

Robert's Union — Colby College, Waterville, Maine

Wednesday, May 22, 1963, 9:30 a.m. to 5:00 p.m.

Luncheon at the Union

All Physicians Welcome

Department of Health and Welfare Division of Maternal and Child Health Including Services for Crippled Children (By Appointment Only)

Orthopedic Clinics

Augusta — Augusta General Hospital
1:00 p.m.: Apr. 25
Bangor — Eastern Maine General Hospital
9:00 a.m. and 1:00 p.m.: May 23
Fort Kent — Peoples Benevolent Hospital
10:00 a.m.: May 8
Lewiston — Central Maine General Hospital
9:00 a.m.: Apr. 5, May 17, June 21
Portland — Maine Medical Center
9:00 a.m.: Apr. 8, May 13, June 10
Presque Isle — Arthur R. Gould Memorial Hospital
9:00 a.m. and 12:30 p.m.: May 7
Rockland — Knox County Hospital
1:30 p.m.: May 16
Rumford — Community Hospital
1:30 p.m.: June 19
Waterville — Thayer Hospital
1:30 p.m.: June 27

Cardiac Clinics

Bangor — Eastern Maine General Hospital
9:00 a.m.: Apr. 12, 26, May 10, 24, June 14, 28
Portland — Maine Medical Center
9:00 a.m.: Every Friday (holidays excepted)

Pediatric Clinics

Bangor — Eastern Maine General Hospital
1:30 p.m.: Apr. 26, May 24, June 28
Presque Isle — Arthur R. Gould Memorial Hospital
1:30 p.m.: May 22
Waterville — Thayer Hospital
1:30 p.m.: Apr. 2, May 7, June 4

Adolescent Clinics

Portland — Maine Medical Center
1:00 p.m.: Apr. 24, May 29, June 26

Cystic Fibrosis Clinics

(In conjunction with the Maine Medical Center, Portland)
Portland — Maine Medical Center
9:00 a.m.: Apr. 16, May 21, 22, June 18

The Journal
of the
Maine Medical Association

Volume Fifty-Four | Brunswick, Maine, May, 1963 | No. 5

Acute Gastric Dilatation, A Serious Obstetrical Complication*

Norman Levin, M.D. and Alice N. Cunningham, M.D.

Acute gastric dilatation was first described in 1883 as a rapid enlargement of the stomach and duodenum without organic obstruction.[1] The distended viscera containing not uncommonly 5 to 7000 ccs. of fluid, gases and undigested intestinal juices.

There are four main theories explaining this condition:

1. Dilatation of the stomach causing direct pressure on the duodenum which will increase back pressure and further dilatation of the stomach.

2. Nervous reflex action, the so-called vagovagal reflex, causing an adynamic duodenum ileus.

3. Disturbances in electrolytes - particularly hypokalemia which can result in stomach atony.

4. The Dragstedt theory which explains acute gastric dilatation by the pull of the mesentery causing some obstruction at the distal portion of the duodenum. Superimposed upon this fact is the failure of reabsorption of the accumulated gastric and pancreatic juice in the proximal dilated bowel causing even small degrees of intestinal obstruction to be of marked significance.

Our purpose in presenting this paper is to focus the attention of the obstetrician upon this entity as a cause of shock that must be recognized and treated quickly before irreversible changes occur, and to present the following case as an example of acute gastric dilatation occurring in the parturient.

Case Report

The patient is a twenty-one year old Caucasian female, para 1001, Rh positive, STS negative. Her last menstrual period was July 20, 1959 and E.D.C. April 27, 1960.

Her personal and family history were negative. Throughout this pregnancy the patient had had nausea, vomiting and severe heartburn. The nausea and vomiting were fairly well controlled on antiemitics. Her total weight gain during pregnancy was thirty-one pounds. Five days prior to admission she had an elevated blood pressure of 160/100 in her private physician's office. The day before admission on March 29, 1960, she began having severe nausea and vomiting.

Blood pressure at the time of admission was 140/90. The abdomen was noted to be large for the period of gestation (thirty-six weeks). Reflexes were normal. She was placed on IV fluids, bed rest, 500 mg low sodium diet, phenobarbital mgs 30 four times a day, Hydrodiuril® 50 mg. hd and Reserpine® 0.1 mg. QID. A flat plate of the abdomen revealed a twin pregnancy. Hgb. was 12.4 mgs, and Hct. 36%. Blood chemistries were normal except for a CO_2 of eighteen meg/1 and uric acid of 9.3 mg.%. Urine showed 1+ albumen and occasional cast. During the afternoon and night the patient was quite nauseated and vomited several times; she also was restless and unable to sleep. At 10 P.M. she received Seconal® 100 mg. P.O.; because of the continued restlessness, Nembutal® 100 mg. Phenergan® 25 mg. was given around 11 P.M. She complained of a severe headache. Blood pressure was 130/80.

At 8 A.M. the patient was taken to the delivery suite; she was having mild labor pains. Blood pressure at this time was 110/86. The vertex of the first twin was presenting at -2 station. The cervix was 2 cms. dilated and 90% effaced. At 9:15 A.M., 1000 ccs. 5% D/W with 8 minims of Syntocinon® was started, and the patient was given Demerol®, 50 mg. and Scopolamine® 0.6 mg. IV for sedation. Her contractions became regular and at 10 A.M. the cervix was dilated 3-4 cms. It was noted at this time that there was *considerable gastric distention.* Around 10:20 A.M. the patient began having projectile vomiting of coffee ground material. Her blood pressure dropped to 70/50. A Levine tube was inserted and intermittent suction applied, obtaining a copious amount of chocolate colored material (approximately 2500 ccs.). Levophed® was added to the bottle of fluids with a prompt response of the blood pressure. Thereafter there was some fluctuation in the blood pressure between a systolic of 90 - 130 mm. Hg., but it remained within normal limits.

Delivery was effected under pudendal block. The first twin weighing 2140 grams was delivered with low forceps. There was no heart beat or respiration. Major resuscitation was performed and intracardiac adrenalin was given without response. The second twin weighing 2130 grams was delivered by total

*From Department of Obstetrics - Gynecology, Lutheran Hospital of Maryland, Inc., Baltimore 16, Maryland

breech extraction. The condition of this twin was fair at birth but gradually improved and the baby was discharged on the sixth post partum day.

Autopsy of the first twin showed no congenital abnormalities. There was primary atelectasis of the lungs and passive congestion of the viscera. The brain was negative. The placenta showed a marked paling around the insertion of the cord of the first twin. Microscopic examination showed fibrinoid degeneration of this area. Otherwise, there were no significant findings.

Levophed was discontinued after delivery with the blood pressure remaining stable. The Levine tube was clamped off in twenty-four hours and the patient was able to retain fluid well. Thereafter the patient did well, having only one more episode of vomiting on the second post partum day. She was discharged on the third post partum day.

Discussion

All the authorities on this subject agree that general anesthesia and abdominal surgery are the most common predisposing causes of the problem of acute gastric dilatation.

Our general surgical colleagues are usually very familiar with gastric dilatation because they are more commonly confronted with this problem. The internist sees this entity in wasting diseases and in malnutrition states.[2] The obstetrician will have occasion to treat gastric dilatation during labor and post partum; particularly when a general anesthetic is used or the delivery is accomplished via the abdominal route.

It is of importance to speculate as to why the obstetrical patient is predisposed to acute gastric dilatation during labor. This may be due to the fact that at this time there is definite decreased peristaltic activity of the intestine thereby delaying the emptying time of the stomach. Thus if a patient were to eat a meal just prior to the onset of labor, it is conceivable that at the time of delivery, large amounts of undigested food and gastrointestinal secretions would be present in the stomach. Despite having not eaten twelve hours prior to labor, our patient still accumulated an enormous amount of gas and pancreatic gastric fluids. Certain drugs used for analgesia and anesthesia would further decrease peristaltic activity; the opiates and Demerol in particular, can cause spasm of the pyloric sphincter adding further delay in the stomach emptying time.[3] Add to this a general anesthetic and the hazard of the acute gastric dilatation may become real. With these facts in mind, one wonders not that the parturient can develop gastric dilatation, but why she doesn't develop it more commonly. The reported patient did receive Demerol during labor, which further aggravated her pre-existing gastritis and altered bowel activity.

Symptoms of Acute Gastric Dilatation

In the beginning, the patient may experience nausea and vomiting, hiccupping and belching with the vomiting at first assuming a greenish appearance and later a brownish-black coloration. A diagnostic differential point is that this vomitus has no fecal odor. Inspection of the upper abdomen reveals an enlarging mass, representing gastric and duodenal dilatation. If the accumulation of fluid and gases occur in a rapid manner, shock-like states ensue; if it is a slow accumulation, then one is not likely to have a drop in blood pressure. As the condition progresses, electrolyte imbalance, azotemia and all the signs of tissue dehydration occur.

Treatment today is mainly one of prophylaxis:

1. Do not administer a general anesthetic to any patient with the possibility of food in the stomach, particularly a pregnant woman.
2. If the patient has persistent nausea and vomiting, put a gastric tube down with continuous Waghenstein suction before gastric dilatation occurs. Vasopressor substances may be added to the regime if evidence of persistent hypotension occurs. Generally however, once the intubation has been performed and the stomach has been decompressed, the hypotension will correct itself.
3. Finally, electrolyte imbalance should be corrected by the proper administration of IV fluids.

The prognosis is good if the treatment is early. In those reported cases where there has been neglect in the diagnosis, fatalities have been given as high as 75%.

Conclusion and Summary

Be aware of the problem of acute gastric dilatation in the obstetrical as well as the surgical patient. Proper prophylaxis can often prevent it from occurring. If it does occur, act quickly by intubating the stomach before shock ensues. This is particularly true in the patient who develops acute gastric dilatation with the baby still in utero, since a drop in systolic blood pressure below 80 for ten minutes can cause fetal bradycardia and hypoxia. If hypotension persists, there may be permanent fetal residual changes or even fetal death in utero in addition to the morbidity of the parturient.

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Actinomycosis Of The Appendix And Cecum

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In 1950 Drs. Putman, Dockerty and Waugh[1] at the Mayo Clinic wrote an extensive summary of abdominal actinomycosis. At that time they reported that Actinomyces bovis is found only in human beings and animals and lives in the floor of the mouth and gastro-intestinal tract, capable of becoming pathogenic only when disease process destroys the normal lining and invasion is possible. (Sir Zachary Cope[5] has stated that this occurs largely following perforative appendicitis.) The older theory that its source was from grasses had been discarded. They report that it occurs most frequently in young adults and middle age groups, that the drug of choice was penicillin in doses of approximately 1,000,000 units daily for four to eight weeks, probably used in conjunction with sulphadiazine, and that supplimentary surgical procedures may be necessary. In 1947 Farris and Douglas[2] had reported that surgical drainage of abscesses and excision of diseased tissue remain the most important features of treatment of this disease. Wilson[3], in the British Journal of Surgery in 1961, has summarized 14 cases of abdominal actinomycosis from the literature and his own. He felt that surgery, apart from the initial operation, has no place other than the evacuation of definite abscesses, and that penicillin had changed the picture remarkably. He suggested that it be given in units of 2 megaunits daily until all signs of induration had disappeared, and that it would be wise to continue treatment two months after all physical signs had disappeared. Ian Aird[4] suggests that penicillin be given for from three to four months, with a reduction to a period of three weeks if actinomycosis has been found only harboured in the lumen of a removed, inflamed appendix. He states that this constitutes one good reason for pathological examination of a removed appendix as can be seen in the following case.

Case Report

A seventeen-year-old Indian Male was admitted to the Eastport Memorial Hospital on April 5, 1962 with a history of being perfectly well until 1½ weeks prior to entry when he developed a dull pain in the right side. The pain gradually became localized in the right lower abdomen and was associated with some limp on walking. There was no vomiting or diarrhea. Physical examination of the heart and lungs was normal. There was moderate spasm in the RLQ, associated with an indefinite suggestion of a mass. Laboratory work revealed wbc 16,500. A diagnosis of appendicitis with possible phlegmon was made. Operation was performed through a right lower quadrant muscle splitting incision, and at operation a large phlegmonous mass of cecum and terminal ileum was found with an inflamed, swollen appendix bound down to it. The appendix was removed after freeing adhesions, and the appendix and meso-appendix clamped, cut and ligated. Post-operatively the patient did well. He was placed on penicillin due to the phlegmonous mass. Several days post-operative, he developed a small subcutaneous abscess which was drained; this closed spontaneously in a few days. The specimen was sent to the Pathology Department of the Maine Medical Center, Portland. Their report revealed "an inflammatory reaction, which had extended through the wall and was characterized by a heavy neutrophilic infiltrate and fibroblastic proliferation into the mesoappendiceal fat. There were several colonies of organisms having the morphologic characteristics of actinomycosis. With the hematoxylin-eosin stain these were made up of darkly stained central portions with pinkish acidophilic ray-like processes extending out at the periphery. There was usually quite a heavy leukocytic infiltrate surrounding each colony." A diagnosis of actinomycosis of appendix was made.

The patient was placed on 1,200,000 units of penicillin daily, intramuscularly, with limitation of activities. On May 19, 1962, or 6 weeks post-operative, he had a sudden recurrence of pain in the right lower abdomen associated with cramps. Examination revealed tenderness and rebound tenderness in the RLQ together with slightly overactive peristalsis. It was felt that he had a recurrence of the actinomycosis in the cecum, and he was placed on 2,000,000 units of penicillin daily, intramuscularly. He also received Achromycin,® 250 mgm, QID, for a total of two weeks. On September 11, 1962, he had a barium enema which was reported as normal, and on September 25, penicillin injections were stopped after a total of about 5 months or 4 months following recurrence. Since that time he has been followed with no evidence of tenderness, spasm or mass being present.

Conclusion

Actinomycosis of the appendix and cecum occurs sporadically. It is due to organisms of Actinomyces bovis probably already existing in the alimentary tract, and most likely invading a mucosa only when it has been altered by disease or trauma. This patient had no history of prior disease to the appendix. For treatment, penicillin must be given in 2,000,000 units daily, intramuscularly, for at least two months after all physical signs disappear; in this case longer because of the clinical signs of recurrence.

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General Practice — The Field Of Comprehensive Medicine

Robert P. Andrews*

"Why should I go into general practice?" is frequently heard among medical students today. Why indeed, when there are so many interesting specialties available? Not only do the specialties appear lucrative and scientifically more exact but also less concerned with mundane problems which frequently arise. They require shorter hours, lend themselves readily to teaching, and have the prestige attached to the designation "Specialist" which is hard to match. To the medical student who rarely gets a first-hand look at general practice, and is continually exposed to specialty clerkships, it makes much more sense to choose specialized training. As one of a group of medical students interested in general practice, I have been privileged to undergo a preceptorship in this specialty while in medical school — hence the title of this paper.

As a student in Boston, I have been exposed to many hospitals and services. This, with my experience as an externe at a private hospital in the metropolitan suburbs forms the basis for the attitudes which brought my G. P. preceptorship. I found what modern general practice in rural Maine is like, and that quality is the rule rather than the exception. I have also seen how one doctor can care for 3500 patients and still be a scientist. Add to this the prospect of a reasonably normal family life and the possibility of an ideal medical life becomes apparent.

Early in the fourth year of medical school, I selected a G. P. preceptor who practices in Southern Maine. The town has a population of 15,000 with 12 general practitioners and a 54-bed general hospital, built in 1928. The staff includes two general surgeons, an orthopedic surgeon, a urologist, an anesthesiologiest, a part-time radiologist, and a part-time pathologist. There are adequate paramedical personnel available full-time and most laboratory tests can be done locally. Thirty-five minutes away the university-affiliated Maine Medical Center serves as a referral center.

A typical week begins with morning surgery. With adequate dexterity, my preceptor performs appendectomies, cholecystectomies, T & A's, and herniorrhaphies. The more complicated cases, such as radical mastectomy, gastrectomy, amputation, or orthopedic surgery are usually performed by the local surgeons with the G. P. assisting. Several mornings have no scheduled surgery; and house calls which must be made periodically on geriatric patients are taken care of at that time. The chance to ride in the country, meet the local folk, and see the real ruggedness of patients who reach the eighties and nineties is very refreshing and instructive. It is easy to travel to them even in the winter because of Maine's practice of clearing snow and de-icing roads as soon as the first flakes begin to fall.

Each afternoon, except Thursday, office hours begin at one o'clock and end at six. The first hour and a half is filled with appointments only and the remainder of the time by patients as they come in. Everything from minor surgery such as a wart removal and skin biopsy to X-ray and ultrasonic is handled in the office on an average afternoon. From 30 to 40 patients appear daily, and most of these are seen by the doctor. A few come in just to pick up medication or receive injections but each patient sees one of the two well-trained R.N.'s daily, and the doctor at least every other visit. Many patients are seen in less than ten minutes, but not a few spend as much as 45 minutes in the office with the doctor, often discussing family and emotional problems. It is interesting to see how much more understanding the doctor is able to give because of the fact that he too is a long time local resident and knows a lot more about his patients. It is unusual to be in the office after 6:00 p.m., and the reason for this is patient education. The great majority of would-be house calls are handled during office hours because of this latter factor, and despite a seeming incongruity, not one of the literally hundreds of patients seen during the month was pushed out of the doctor's office because of a rush to get to others. I attribute this to my preceptor's seemingly endless patience and the concern he has for his patients.

The office itself is well equipped, and although in an older building, the surroundings are pleasant. The big advantage in the low upkeep building is the amount of space. There are eight examining rooms available, and each is equipped differently. One is equipped for ENT, another for pediatric examinations, another for minor surgery, one with X-ray, and another for electrocardiography. Another has a GYN table and two more are equipped with tables and instruments. It should be pointed out that two other G.P.'s also make use of these facilities and have their offices in other rooms on the same floor. Conflicts in the use of these examining rooms occasionally arise, but are easily resolved. The two other physicians are the last of the

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old time G.P.'s who still practice in town, and the contrast that exists between their practices and that of my preceptor's is marked. Both of the older men have been in practice for almost 40 years and still have Sunday office hours and patients who take advantage of their availability. My G.P. preceptor, on the other hand, typifies the modern generalist who has educated his patients to feel that he, too, has a right to a home life and a regular day off away from his work. This seeming independence on the part of my preceptor is more apparent than real, however, as he and three colleagues have arranged to have constant coverage for all their patients. The doctor on duty for the day off, a special night out, or a weekend takes all emergency cases except OBS for all four physicians. It is very interesting to note that the people get along well with this arrangement, and on any given weekend, the duty M.D. sees largely his own patients. More often than not patients wait for their own physician to return. This fact leads one to believe that the modern generalist can and does lead a nearly normal weekly work life. There is no question between these informally grouped physicians but that they are always available to each other.

The Thursday off is begun with rounds in the hospital and then home to the family and a day of relaxation on the ocean in the summer or to a nearby ski area in the winter. Here, too, is an excellent time to catch up on the current journals or attend lectures at nearby medical centers. Two of the M.D.'s take Wednesday off and the other two Thursday, so that it works out well for patient coverage Friday is the usual routine, and Saturday morning is OBS appointment time. With about 100 deliveries yearly, my G.P. averages a few more than most of the other local practitioners, but if even two-thirds of these occur in the nighttime[1] it can hardly be a reason for calling general practice too demanding. Four or five OBS patients a year undergo hypnosis sessions prior to delivery as further evidence of the time the modern generalist is able to devote towards learning new techniques. Obstetrics is, of course, unpredictable and one of the most challenging parts of general practice. The training and experience necessary to be a successful obstetrician is extensive. My preceptor has developed this knowledge in his general practice and has it well organized. Aiding him in this task is a well trained Obstetrical R.N. who specials each of his OBS patients from the onset of labor until after delivery. Having established a pre-partum rapport with the patients, she is ideally suited to remain with the expectant mother until parturition. This works out extremely well in practice, and it is a rare occurrence to have a precipitous delivery. Each patient is seen regularly for pre-natal check-ups and a six-week post-partum examination. All charges to the patient are covered by a single flat fee, and so the patient is encouraged to come for all her examinations since she is paying for them anyway. This is another example of contrast between the old and the new family physician, as the older G.P.'s charge for each visit separately. It is a distinct relief and pleasure to see competent OBS practiced in a rural community, because I had been led to believe that only in a modern university hospital is this possible.

At home at night with his family, the doctor takes the calls that come in and makes the necessary house calls. In the average week, there are about ten such visits but it is surprising, how many calls can be arranged for the next available office hours. This takes a good deal of knowledge about the patients on the doctor's part and is, I'm sure, one of the benefits of nine years in general practice.

One important task that the G.P. performs is the referral of patients to various specialists. Take the case of a 60-year-old man, hoarse for a year with a lesion on his vocal cord, who is then sent to an ENT man for treatment of laryngeal cancer. The same occurs with the obscure hematologic dyscrasia or the inoperable cervical carcinoma which requires radiation therapy. The art of knowing when to refer and when to consult is born of good residency training, generalist experience, and a healthy knowledge of one's own limitations. Without it, the modern G.P. can hardly be called up to date.

Another fascinating aspect of general practice in rural Maine is the economic situation encountered. Almost 90% of my preceptor's patients pay their bills, and although he has a record of over $35,000 that will remain unpaid, his income exceeds the national average for physicians[2] by about 10%. This is not only due to the "Yankee" population of New England but also to the fact that both he and his office nurses have trained themselves in the necessary tasks of billing regularly for services and keeping medical accounts up to date and correct. It is strange that the patients who don't pay their bills seem to be in the younger age groups and up to their ears in time payment accounts. The doctor gets paid last by this group and that is often never. Particularly aggravating is the patient who receives an insurance check for medical bills, spends it on himself, and then hasn't got five dollars to pay for a house call while he looks at his new T.V. set! How to handle these patients and many other economic facts of medical life are not taught in medical school. It is gratifying to find that the great majority of geriatric patients attempt to pay their bills and most succeed. Those that can't are still welcomed as patients by the modern physician and receive adequate care. These facets to the contemporary medical care for the aged questions were among the most interesting facts I learned in my first month of general practice.

The actual case material seen was extremely diverse. All the specialties came to have meaning daily, and it was not a continual parade of ENT, orthopedic, or gynecologic problems, but an astounding array of all the different and varied medical problems which plague patients. We saw everything from collagen disease to

ingrown toenails, stomach cancer, and myocardial infarction.

It is a rare practicing physician who does not also deal with emotional problems every day. In general practice, the emotional component to each illness is particularly evident, and the full force of this was repeatedly brought home with every patient. Each patient needed, and some asked outright, for reassurance and emotional propping-up. The psychotherapy performed is of an admittedly minor nature but extremely important in general practice. Here, indeed, is where the art of medicine comes into its own and is practiced by the conscientious family doctor. I've heard this over and over while in medical school but like much of medicine, it is difficult to conceive until seen and then the reality bursts forth and the problem becomes indelibly stamped on one's mind. All of the patients had an emotional component to their illness which needed brief treatment at least, or was referred for psychiatric treatment at most. The psychology that can most benefit a particular patient can only be expressed by a physician who can adapt for each age group and personality type. To pick out the ambulatory compensated psychotic is a very demanding task which rests with the generalist who sees the patient first and knows him best.

The specialist today is at a disadvantage because the patient comes not as a compartment, but as a whole entity and only the well-trained generalist can possibly do full justice to each patient before the area which will be diagnosed becomes evident. The way to produce the needed modern generalists is for our specialist-teachers to train students toward that end, and it is necessary that they pay more than lip service to this pressing need for trained G.P.'s. Indeed, one of the greatest tasks confronting our medical schools today is to produce a competent M.D. who can and will go into this field.

The American Academy of General Practice has many members that are willing to take students from two to four weeks at a time in their senior year and give them the benefit of experience such as I have had. Medical schools such as Tufts are now making these programs available to students, and further success is to be anticipated. The conscientious physician can be a G.P. and a competent medical scientist as well. Organization, colleague association, and patient education are the keys to the rewarding field of comprehensive medicine. Combined with a reasonably normal family life, the appeal of a profitable general practice in modern medicine can be extremely attractive.

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Retrolental Fibroplasia

Warning re Retrolental Fibroplasia issued by the Maine Medical Association—Committee on Maternal and Child Welfare.

Retrolental Fibroplasia has been appearing again. In 1954, after many years of research, it was concluded that oxygen used for premature infants in excessive amounts could cause RLF. At that time it was recommended that the concentration be no higher than 40%. To this recommendation the following one has to be added: It is very important to use oxygen for the shortest period indicated since the prolonged duration of giving oxygen may be responsible for the reported cases during the last few years. The recommendation reads as follows: Oxygen should be given only when absolutely indicated and only for the shortest duration necessary for the individual case. A review of the condition is indicated at very frequent intervals to enable the physician to revoke the order for oxygen at the earliest possible time.

When Ether Was A New Miracle

Robert S. Gillcash, M.D.

Dr. Charles T. Jackson, mineralogist and chemist for the state of Massachusetts, introduced William T. G. Morton to ether. The unique anesthetic properties of ether excited Morton, and he began to use it in his practice of dentistry to extract teeth painlessly. Morton was able to see profit in the future of ether and, with Jackson, applied for patent rights.

In order to gain recognition for his purposes, he prevailed upon Dr. John Collins Warren of the Massachusetts General Hospital to grant permission to demonstrate its use in surgery. After some debate, he was allowed to employ "Letheon," as he called it, at the hospital without being required to reveal its chemical nature. On October 16, 1846 the first public demonstration of the use of ether was given in Boston at which time a small vascular tumor on the neck of a brave patient was removed. The results were outstanding, and the scene was repeated the next day. Subsequently, Morton moved swiftly to obtain the patent he so much desired.

Other interested people, more concerned with the proper use of ether than the monatary advance, rebelled and ether was presented to the world in the Boston Medical and Surgical Journal of 1846-47, Volumes XXXV, by Henry J. Bigelow.

Morton hung closely to his secret substance however, and it was not until his "Remarks on the Proper Mode of Administrating Sulfuric Ether, etc." Boston, 1847, did he admit to the nature of "Letheon."

During this rush of events, Dr. Morton's practice grew and, needing more help to handle it, he took into his office Dr. Nathan C. Keep a prominent dentist at that time. With Dr. Keep came his dental apprentice Lester Noble who has left behind an illuminating view of Morton and of the earliest uses of ether.

Dr. Noble was born November 11, 1819 into a family whose descendants were recorded in the Springfield, Massachusetts area as early as 1653. After spending several years as an apprentice in the spectacle business in Longmeadow, Massachusetts, he went to Boston in 1846 to study dentistry with Dr. Nathan C. Keep, one of the leading dentists in that city at the time. During this association Dr. Keep joined forces with Dr. Morton to use and develop his new miracle, "Letheon." Noble was placed in charge of all anesthesia in the Keep dental office, and thereby became expert in the administration of ether.

In 1849, after three years of apprenticeship in Boston, Dr. Noble entered the Baltimore College of Dental Surgery. He received his D.D.S. degree and remained two additional years to teach technical dentistry and the art of making artificial teeth. In 1852 he began the practice of dentistry in Washington, D. C. and quickly built up a distinguished clientele including President Buchanan, the wife of President Pierce, the French, German and Russian Ambassadors and Senator John C. Calhoun. Unfortunately this lasted only eight years, at which time Dr. Noble was forced to give up his practice because of an eye injury. He returned to his home in Longmeadow, Massachusetts where he slowly re-established his professional contacts and lived there until his death at the age of 85. Some time during his later years he wrote the following description of the early days of the use of ether in Boston.

When Ether Was A New Miracle

"Early in October 1846, Dr. Morton, a dentist of Boston, announced that he had discovered a compound, the vapor of which, when inhaled for a few minutes rendered the person insensible and one or more teeth could be extracted without pain or bad results. After a while he named his "new compound" Letheon. Dr. Morton wished to have an opportunity to try it at the hospital, and after some delay in consultation on the part of the surgeons in charge, he was permitted to do so. They soon discovered that this "new compound" was sulfuric ether and when they learned that Dr. Charles T. Jackson, the state chemist, a man well and favorably known, was connected with it, Dr. Morton was allowed to administer it in quite a number of severe operations, such as the amputation of the leg and removing tumors. These operations were performed without pain and without the least harm to the patient. Letheon, or sulfuric ether was then launched upon its errand of mercy.

"In less than one month from this time, November 10, 1846, a joint patent was issued to Dr. Charles T. Jackson and Dr. William T. G. Morton. Very soon, however, Dr. Jackson, ashamed of patenting a remedy and disgusted with Morton, stepped out and we hear no more of his property in the patent, but he was very ambitious to have his name recognized in connection with the discovery. I am sure he did not sell out but stopped having his name used in connection with a patent on a remedy. Dr. Jackson was the state chemist and a mineralogist and had a reputation at stake, while Dr. Morton had everything to make and nothing to lose, — a fine-looking man, with a good address, ambitious, and reckless.

"I was then a student in Dr. N. C. Keep's office in Boston. Dr. Keep's office was in his house, and I lived

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in the family. Dr. Charles T. Jackson was often there evenings, and several times I heard him tell Dr. Keep how Morton first came to him to get something to put on the handkerchief and have a lady who was in his office inhale it, and said he could make her believe it did not hurt her to have a tooth extracted. 'What is the use of doing that?' said Dr. Jackson. 'I can give you something for her to inhale so that you can extract the tooth without hurting her.' 'Can you, can you? What is it? What is it?' Dr. Morton went to his office and did it with perfect success. He then tried it several times on different persons for extracting teeth, always with good results.

"Dr. Morton was often at Dr. Keep's office, telling of the wonders of "Letheon." Somehow Dr. Keep's head became turned and Morton pursuaded him to form a partnership and remove to Morton's office at 19 Tremount Row, which he did on the first of December 1846, and his student went with him. He had one large room reserved for his private office, and went on filling teeth, occasionally giving ether. Here I strictly belong, but went pretty much where I chose, and looked over things generally and could tell Dr. Keep how they gave the ether and how they managed their patients. I will describe one room of the establishment. There were three or four stalls made with screens of cotton cloth; each stall was perhaps nine feet long and six wide containing an extracting chair, a small table for instruments and a spittoon. There was a rush of people to have teeth extracted.

"The victims were placed in one of these chairs, ether was given from a napkin or a sponge, and used over and over again on different persons. As soon as the teeth were out, a young man was left to care for the patient until he could leave, which was soon, as small doses were given, requiring a very short time. Then another person was brought in. The extracting instruments were used several times on different persons without being washed. The spittoons were covered with blood. Dr. Morton did not do any extracting himself but Dr. Haden was the headman of the office and others assisted. They were repeatedly bringing new men, as we should call them drummers. Most of them never had seen ether administered. They would see it used in one of the operating rooms, three or four times and then were supplied with a few bottles of ether and sent out to Worcester and Springfield, or to any place where there were dentist to sell the "patent rights" and give instruction in the use of ether.

"It is a wonder of wonders that no one was killed in this terribly reckless manner of handling such an agent as sulfuric ether. One evening about sundown, just as the day's practice was over, Dr. Morton and Dr. Haden were talking things over. I was in the workroom and very near them. Dr. Haden said: 'Dr. Morton, we are running this thing too fast.' Dr. Morton put his hand on Haden's knee and said: 'It is a big thing and is got to be brought out,'

"In a few days Dr. Keep was the most homesick and disgusted man in Boston, but he stuck it out 30 days, then he took his chair and such things as were his and went back home to 84 Boylston Street. Dr. Keep often spoke of 'those thirty days.' Dr. Morton sued for breach of contract, and Dr. Keep paid him $1,000 to settle up. He said it was 'worth a $1,000 to get home.' From January 1, 1847, the rush to take ether at Dr. Keep's office was sharp. I was detailed to administer the ether and Dr. Keep extracted the teeth. Two or three times a day and sometimes more was not uncommon. We at this time gave small doses, the tooth was usually taken out in the first stage of etherization. In doing this it took a little time and avoided a large per cent of nausea and delay.

"The quicker the patient is brought under the influence of ether, the sooner he is over the effects of it. About this time a lady who had lost her voice and had been unable to speak above a whisper for two months or more, had a very painful tooth, but had not the courage to have it extracted without ether. She came with her physician and he had a consultation with Dr. Keep as to the safety of using ether under the circumstances; they decided to take the risk. Ether was administered, and the tooth extracted, the lady rallied out of it all right and when spoken to replied with a good, clear voice that she had no pain whatever. Her painful tooth had gone, her ability to speak had returned and she went home happy.

"On the evening of the 18th of March 1894, Dr. Keep and myself were in the office when a carriage drove up; the bell rang and a messenger came upstairs and said that Dr. Ware wished Dr. Keep to come at once and bring the ether to Dr. Hemry M. Holbrook's and hurry up. Dr. started in an instant and said, 'Mr. Noble, Mr. Noble, get the ether. Quick, Quick!' It was hardly two minutes before my overcoat was on me and apparatus and bottle of ether were ready. We went downstairs and stepped into the carriage, the door was closed and the messenger was by the side of the driver and the horses at full speed before we had time to guess what was up. Before we had reached house on Beacon Street, we heard a man screaming. We hurried up stairs but when we got to the room and met Dr. Ware the spasm was over, but he said to Dr. Keep, 'Mr. Holbrook has a stone passing from the kidney to the bladder and the suffering is very great. He has had these attacks before, and when he gets through is worn almost to the death by the pain. I have thought of using ether when the next spasm comes on; what do you think of it?' It was decided to try it. Dr. Keep told me to charge up the apparatus and be all ready. We did not wait many minutes before the spasm came on. The patient then commended inhaling ether; with a few breaths, the pain was somewhat relieved. Indeed, so much that it was quite bearable, and a little more ether stopped it altogether. The time between each spasm was not materially lengthened when under the influence

of the anesthetic, showing that the involuntary muscles were not affected in regard to their functions as much as the nerves of sensation. Mr. Holbrook was kept under the influence of ether nearly all the time between eight and nine in the evening until three o'clock in the morning when the patient became quiet and the calculus finished its painful journey. This was the first attempt to keep a patient under the influence of anesthetics longer than for an ordinary surgical operation. Dr. Ware reported this case in the Boston Medical and Surgical Journal. The ether was administered 30 times, besides quite a number not counted.

"Mr. Holbrook was a patient of Dr. Keep's and a long time acquaintance. When this attack came on, he was convalescing from pluropneumonia, with bloody expectoration which disappeared from the night. A few days after, he said that the next day he felt as if he had been out to supper the night before and taken a little too much champagne.

"Dr. Winslow Lewis, whose office was on the next corner to Dr. Keep's, sent over for someone to come and administer ether. The operation was to separate two fingers which had been united in their entire length from birth. The lad was perhaps 12 or 14 years of age; he was on a lounge in a reclining position with head and shoulders much higher than his feet. All being ready, I commenced with the ether, and in a few minutes he was partially under its influence and I told Dr. Lewis I thought he could go on. He hesitated, but soon commenced cutting, the boys was held still, although conscious. After a few cuts, he raised sufficiently to see his hand and cooly said: 'Go ahead, Doctor! You are not hurting a bit.' This remark was made several times before the operation was completed. He came out alright in a few minutes and after the operation was completed assured us that he had not been hurt in the least. He looked at the hands and fingers over and over and still assured us that there had been no pain whatsoever, and showed many thanks for his joy. He was the happiest one of the whole party."

1963 Respiratory Disease Educational Campaign

"Cough too much, short of breath?" These questions will be asked throughout the state from May through June as part of the 1963 Respiratory Disease Program of the Maine Tuberculosis and Health Association and its local affiliated associations.

The primary purpose of tuberculosis and health associations is to serve our fellow man by protecting him from disease and assisting him to better health. The first concern has been to protect him against tuberculosis. A recent concern, related to the first, has been to help guard him from damage by other respiratory diseases.

As pointed out in a joint letter to society members by Brinton T. Darlington, M.D., president of the tuberculosis and health association, and Louis Fishman, M.D., president of the Maine Thoracic Society, "the purpose of the approaching campaign is to get people to realize that two common symptoms—shortness of breath and persistent coughing—may be warning signs and that persons having them should seek medical help.

"Asthma, chronic bronchitis and emphysema (along with tuberculosis and pulmonary carcinoma) are frequently occurring pulmonary problems which should be looked for and ruled out whenever these symptoms 'chronic cough—shortness of breath' are evident and not readily explained."

From the Secretary's Notebook

Summary of Proceedings, Interim Meeting, M.M.A. House of Delegates, April 7, 1963 at Augusta, Maine

Called to Order at 2:10 P.M. by the President-elect, Ernest W. Stein, M.D., who turned the meeting over to the Speaker of the House, Linus J. Stitham, M.D.

A roll call by the Secretary revealed a total attendance of 61, including delegates, alternate delegates, councilors, committee chairmen and guests.

First on the Order of Business was the presentation of a check for $2,000 to the Maine Medical Education Foundation from the Maine Cancer Society. The presentation, which is the second contribution from the Maine Cancer Society, was made by Mr. Howard W. Mayo of Bath, 1963 Cancer Crusade Chairman.

Thomas A. Martin, M.D., Chairman of the M.M.A. Council, receives a check from Mr. Howard W. Mayo, Chairman of the 1963 Maine Cancer Crusade. Interesting observers are: Left, Ralph C. Stuart, M.D., President, M.M.A. and Daniel F. Hanley, M.D., Executive Director.

A Report of the Committee on Disaster Medical Care was made by the Chairman, Charles W. Steele, M.D. of Lewiston. Dr. Steele discussed some of the newer phases of medical disaster care and reported briefly on a course of active military duty at the U. S. Army Chemical Corp. Proving Ground at Dugway, Utah from which he had just returned. He stressed the need for doctors in Maine to take a more active role in the Disaster Medical Care Program.

In the absence of Brinton T. Darlington, M.D., Chairman of the Legislative Committee, the Executive Director, Daniel F. Hanley, M.D., made reference to the following Legislative Documents of interest to members of the Maine Medical Association:

1. Statute of Limitations — Legislative Document 1352.
2. Chiropractic — Legislative Document 479.

Dr. Hanley stated that only by concerted effort on the part of the members of the Association can these bills now be defeated. Every physician must see his senators and representatives personally and let them know that we are definitely against these two bills. This is a big task, but it must be done.

Proposed changes in the Medical Practice Act were presented by Richard L. Chasse, M.D. of Waterville, Chairman of the State of Maine Board of Registration of Medicine.

The President-elect, Dr. Stein, stated that he had appointed the following members to serve on the Nominating Committee (whose duty it is to nominate members for the Standing Committees, where indicated).

1st District — Philip P. Thompson, Jr., M.D., Portland — Chairman
2nd District — Philip B. Chase, M.D., Farmington
3rd District — George W. Bostwick, M.D., Newcastle
4th District — Francis J. O'Connor, M.D., Augusta
5th District — Karl V. Larson, M.D., East Machias
6th District — Raymond G. Giberson, M.D., Presque Isle

The report of the Nominating Committee shall be the first Order of Business at the Second Meeting of the House of Delegates on Sunday, June 23 at 3:00 P.M. at The Samoset, Rockland, Maine.

Presentation of the Financial Statement for fiscal year 1962 and Proposed Budget for 1964 as drawn up by the Council was presented by Charles W. Eastman, M.D., Chairman of the Budget Committee.* Final action on the Budget will take place at the annual meeting of the House of Delegates on June 23, 1963.

Recommended amendments to the Constitution and By-Laws as proposed by the Piscataquis County Medical Society.

Constitution, Article VIII, "The officers of this association shall be a President, a President-Elect, a Secretary-Treasurer (if a member of the Association), and a Councilor from each Councilor District."

PROPOSED AMENDMENT: Insert the word "Speaker" after "(if a member of the Association)."

By-Laws, Chapter III, Duties of the House of Delegates (page 9), Section 4. — "From among the members of the House of Delegates, the President-Elect, for the purpose of expediting proceedings, shall appoint reference committees to which reports and resolutions shall be referred."

PROPOSED AMENDMENT: Change the word "President-Elect" to read "Speaker of the House."

(Final action on these recommendations will take place at the annual meeting of the House of Delegates in June).

A motion that the Report of a Committee to Review the Size, Make-up and Mode of Operation of the Council of the Maine Medical Association be accepted was defeated.

The A.M.A. Delegate, Asa C. Adams, M.D. of Orono stated that resolutions for the A.M.A. annual meeting should be presented to him as early as possible.

*Copy to Councilors, Delegates and Alternates with copy of Interim Meeting Summary on April 17, 1963.

Continued on Page 114

Maine Medical Association

Program-in-Brief – 110th Annual Session

The Samoset — Rockland, Maine

Sunday — Monday — Tuesday

June 23, 24, 25, 1963

Sunday, June 23

9:30 A.M. First Meeting of the House of Delegates

12:30 P.M. Luncheon

3:00 P.M. Second Meeting of the House of Delegates

6:30 P.M. Dinner

Speaker: MR. FRANCIS W. HATCH, Boston, Massachusetts

Subject: To be announced

Monday, June 24

10:00 A.M. to 12:00 NOON

10:00 A.M. **Hypnotherapy in Psychosomatic Disorders — A Practical Approach in General Practice**

WILLIAM S. KROGER, M.D., Beverly Hills, California

11:00 A.M. **Cancer Panel**

Moderator, JOHN F. GIBBONS, M.D., Radiologist, Portland

Participants: EMERSON H. DRAKE, M.D., Surgeon, Portland; STANLEY E. HERRICK, JR., M.D., Internist, Portland and JOSEPH E. PORTER, M.D., Pathologist, Portland

12:00 NOON to 2:00 P.M. Luncheon

2:00 to 4:00 P.M.

Scientific Program Sponsored by the Maine Chapter, American College of Surgeons and Maine Trauma Committee

2:00 P.M. **Tumours and Humours**

WILLIAM H. BAKER, M.D., Massachusetts General Hospital, Boston, Massachusetts

3:00 P.M. **The Surgical Treatment of Hip Fractures**

CHARLES S. NEER, II, M.D., Assistant Professor of Orthopedic Surgery, Columbia University, New York, New York

4:00 P.M. Election of President-Elect

7:00 P.M. Annual Banquet

Speaker: GOVERNOR JOHN H. REED

Subject: To be announced

Tuesday, June 25

9:30 A.M. to 12:00 NOON

9:30 A.M. **Principles of Teaching Machines**

MR. HIRAM NICKERSON, Health Education Associate, The Medical Foundation, Inc., Boston, Massachusetts

10:00 A.M. **Obstruction and Infection of the Lower Urinary Tract**

EDWARD B. D. NEUHAUSER, M.D., Radiologist-in-Chief, Children's Medical Center and Professor of Radiology, Harvard Medical School, Boston, Massachusetts

11:00 A.M. **Modern Treatment of Pituitary Disorders**

HANNIBAL HAMLIN, M.D., Providence, Rhode Island

12:00 NOON to 2:00 P.M. Luncheon

2:00 to 4:00 P.M.

Program Sponsored by the Maine Medico-Legal Society

Medico-Legal Sociological Problems in Maine
CHARLES F. BRANCH, M.D., Lewiston

Problems in the Diagnosis of Drowning
IRVING I. GOODOF, M.D., Waterville

6:30 P.M. Clam Bake

SPECIALTY GROUP MEETINGS

Monday, June 24

2:00 to 4:00 P.M.

Maine Society of Obstetrics and Gynecology and Maine Society of Clinical Hypnosis

Psychosomatic Aspects of Gynecology

WILLIAM S. KROGER, M.D., Beverly Hills, California

M. M. A. Eye Section

Program to be announced

Tuesday, June 25

10:00 A.M. Maine Medico-Legal Society

Business Meeting

Presiding, CHARLES F. BRANCH, M.D., Lewiston

2:00 to 4:00 P.M.

Maine Chapter of the American Academy of Pediatrics and Maine Radiological Society

Subject to be announced

EDWARD B. D. NEUHAUSER, M.D., Boston, Massachusetts

Maine Society of Anesthesiologists

New Anesthetic Agents

ANGELO G. ROCCO, M.D., Anesthesiologist, Exeter Hospital, Exeter, New Hampshire

Maine Thoracic Society

Newer Concepts of Epidemiology of TB as it Relates to Case Findings

JOSEPH B. STOCKLEN, M.D., Controller of Tuberculosis, Cuyahoga County, Cleveland, Ohio

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SPECIAL NOTICES

Sponsor

The speakers for the scientific programs are supported in part by a grant from Eli Lilly and Company.

Election of President-Elect

The election of a President-Elect will take place at the General Assembly, June 24 at 4:00 P.M.

House of Delegates

Included in the Order of Business for the meetings of the House of Delegates will be final action on the Budget for 1964, Standing and Special Committee Reports, Nominating Committee Report and matters presented at the Interim Meeting of the House of Delegates, published in this issue of the Journal, page 104.

Election of Councilors

Election of Councilors for the following Districts will take place at the Second Meeting of the House of Delegates on Sunday, June 23 at 3:00 P.M.

First District — Cumberland and York

Second District — Androscoggin, Franklin and Oxford

Golf Tournament

DANIEL R. SHIELDS, M.D., Chairman

Provision For Medical Care To Dependents Of Members Of The Military Forces Of NATO Countries

1. On and after 1 July 1963 the accompanying dependents of active duty military personnel, who are members of the land, sea and air forces of North Atlantic Treaty Organization countries stationed or passing through this country, will be entitled to the same care under the Medicare Program as those dependents of members of the uniformed services.

2. The standard Identification Form DD Form 1173 will be furnished to those dependents and all contractual provisions and criteria as to scope of care and eligibility will be the same as for dependents of members of our uniformed services.

3. In the coding of Appendix A, the branch of service code and grade of the NATO member will bear the same number as our corresponding branch of service code and grade. For purposes of identification of dependents of NATO members, programming, and budget actions by this office, place an "X" or "11" overpunch in column 17.

4. When NATO claims (DA Forms 1863) are transmitted to this office along with the routine submission of the voucher, claims, and cards should be segregated and earmarked.

5. This provision becomes effective 1 July 1963 and will be implemented by formal contract modification.

6. Contractors are requested to announce this change in the Dependents' Medical Care Program through their periodic publications.

State Of Maine

Department of Health and Welfare

DEAN H. FISHER, M.D.
COMMISSIONER

The Impact Of An Educational Program On Teen-Age Smoking Habits

In the fall of 1961, an educational program regarding cigarette smoking among high school students was undertaken jointly by the Department of Health and Welfare and the Department of Education of the State of Maine. Another study conducted elsewhere had revealed a steady increase in the incidence of cigarette smoking among high school students as they progressed through school from freshmen through senior year.[1]

The Maine program consisted of two phases: (1) a statistical survey of smoking habits and attitudes, and (2) an education program. The program was administered to a selected group of high school students which was made up of the complete student bodies of 26 different high schools distributed throughout the State. Approximately 11,500 students were involved. The 26 schools were divided into an experimental and a control group. Control and experimental groups were selected after the October 1961 statistical study by dividing the 26 schools in two groups, approximately equal in size, with matched smoking habits. Other factors such as school size and geographic location were also considered.

A questionnaire was devised which was to be administered to both groups. However, the educational program was administered only to the experimental group. The questionnaire was devised to obtain information concerning both smoking habits and attitudes of students toward smoking.

The educational program consisted of five educational exposures which were well spaced throughout each school year. Each exposure included (1) an audio-visual component, such as a film, film strip, etc., (2) a discussion, (3) a pamphlet or piece of literature which the student was to take home and read. The program in each school was under the direction of a coordinator —a teacher previously appointed by the principal. A concerted effort was made to reach every student in every school in the experimental group. The coordinator could administer the educational exposures himself, or could delegate other teachers in his particular school to assist in this respect. The approach to the student was to be adult in fashion, adopting a straight-from-the-shoulder attitude. Both-sidedness was to be employed, mentioning the pro's and con's of the problem. Effects of smoking both contemporary and remote were incorporated in the exposures, and the student was advised to weigh the evidence and draw his own conclusions.

The original survey in the fall of 1961 revealed the pattern of regular smoking habits represented by the curve in Chart 1A. About 15% of 9th grade students smoke regularly in both experimental and control group. The percentage of students who smoke regularly increases smoothly throughout high school until the senior year. About 32% of high school seniors smoke regularly. The congruence of the curves for experimental and control groups in the October 1961 survey is due to the method of selecting experimental and control groups outlined above.

It is a major objective of the program to ascertain whether or not a planned educational program such as that described above would distort the curve representing the smoking habits of students in experimental schools. In May 1962, at the end of the first year of the program, a second survey showed no discernible change in smoking habits of students, although it appeared that the attitudes toward smoking of students in the experimental group had been altered significantly. This result has been previously reported in the *Journal of The Maine Medical Association,* March, 1963, Volume 54, No. 3.

It was felt at that time that it would take a longer period of time before any noticeable change would result in the cigarette smoking habits of the students in the experimental group. However, the survey conducted in the fall of 1962 at the beginning of the second year of the program revealed interesting findings. This paper presents an early report of these findings.

The curves in Chart 1B represent the pattern of regular smoking by school grade students in October 1962. Differences between control and experimental groups are readily apparent.

The discussion here will center upon differences between experimental and control groups at the time of the October 1962 study rather than changes which occurred within either group between October 1961 and October 1962. The purpose of the survey is to

[1]Horn, Daniel, Ph.D., et al., "Cigarette Smoking Among High School Students, "American Journal of Public Health, Vol. 49, No. 11, Page 1497-1511, Nov. 1959.

test the effect of the educational program. The effect of the program, if any, will be apparent in differences between experimental and control groups after exposure to the program.

Obviously there are factors other than the education program which affect the smoking habits of high school students. These factors would tend to produce the same effect upon both experimental and control groups if there were no education program.

The phenomenon of change in smoking habits within experimental and control groups will be discussed elsewhere in the report.

The October 1962 study showed significant difference between smoking habits of students in experimental and control schools which may be attributed to the educational program. There were fewer "regular" smokers, i.e.: students who smoked at least one cigarette every day, in experimental schools than in control schools. In control schools 22.7% of all students were regular smokers as compared with 19.9% in schools where the educational program had been conducted. The difference results from a decline in heavy smokers, i.e.: those who smoke at least ½ pack a day, in experimental schools and a corresponding slight increase in heavy smokers in control schools. See Table 1. There is no indication in the study that students were influenced to stop smoking or that it prevented students from trying cigarettes experimentally.

TABLE I

PER CENT OF STUDENTS WHO SMOKE REGULARLY BY EXTENT OF SMOKING HABIT: EXPERIMENTAL AND CONTROL SCHOOLS, OCTOBER 1961 AND OCTOBER 1962.

Extent of smoking habit	*October 1962*		*October 1961*	
	Experimental	*Control*	*Experimental*	*Control*
All regular smokers	19.9	22.7	20.9	22.1
½ pack a day or more	10.0	11.7	11.2	11.2
Less than ½ pack a day	9.9	11.0	9.7	10.9

Grade 10 was the grade which showed the greatest change. The percentage of regular smokers in grade 10 in experimental schools was 18.1% as compared with 22.7% in control schools, a difference of 4.2 percentage points. This is a statistically significant difference. Smaller differences, or borderline significance, occurred in the 9th and 11th grades. It is possible that differences in grade 9 may be attributable to educational programs in some junior high schools in certain experimental towns.

Tables 2A and 2B show distributions of smoking habits by school grade in 1962 and 1961 respectively.

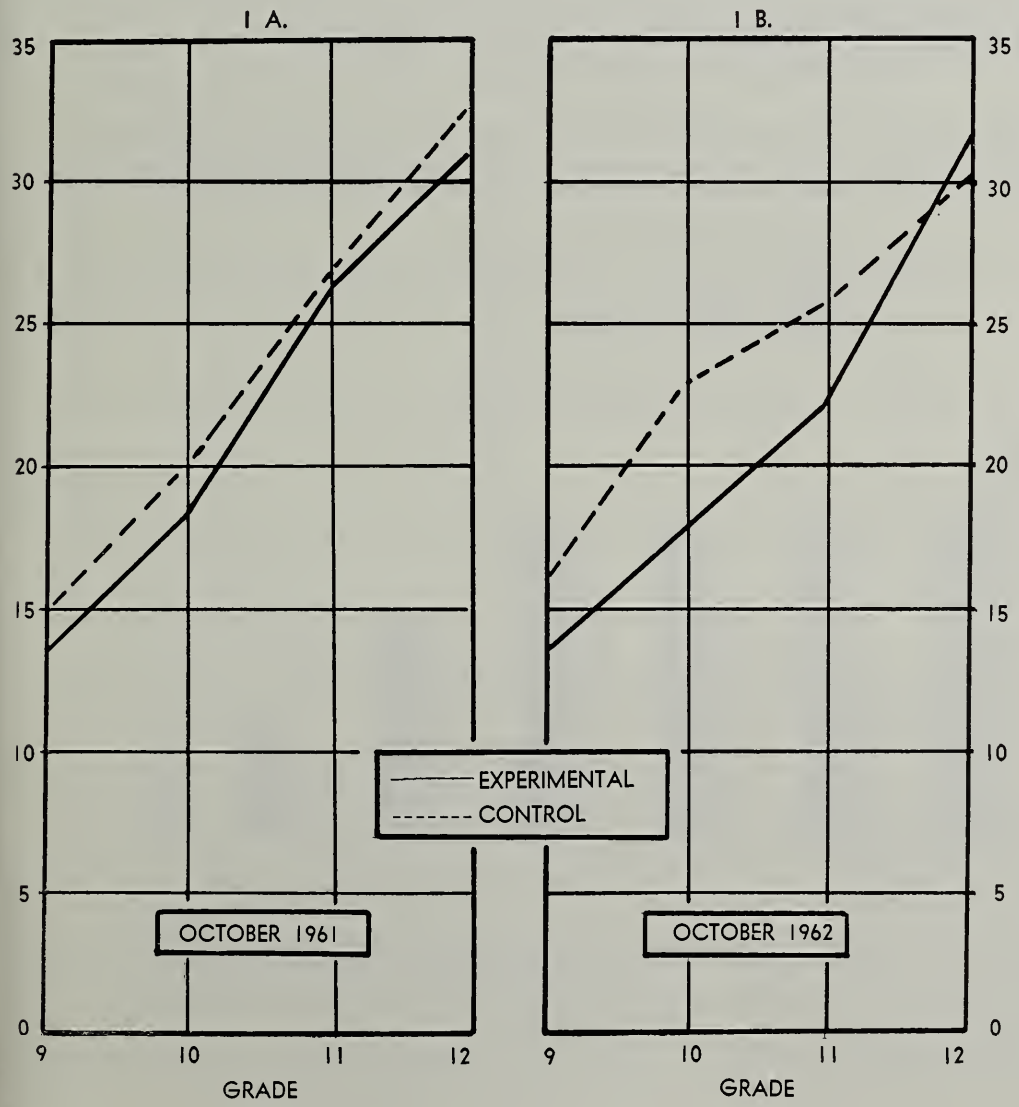


CHART 1

PERCENTAGE OF STUDENTS WHO SMOKED REGULARLY BY SCHOOL GRADE EXPERIMENTAL AND CONTROL GROUPS OCTOBER 1961 AND OCTOBER 1962

TABLE 2A

PERCENTAGE DISTRIBUTION OF STUDENTS BY EXTENT OF SMOKING HABIT AND BY SCHOOL GRADE, EXPERIMENTAL AND CONTROL SCHOOLS, OCTOBER 1962.

	EXTENT OF SMOKING HABIT									
High school grade	*½ pack a day or more*		*Less than ½ pack a day*		*Occasional**		*Stopped smoking*		*Do not smoke*	
	Exp.	*Con.*	*Exp.*	*Con.*	*Exp.*	*Con.*	*Exp.*	*Con.*	*Exp.*	*Con.*
9	5.8	7.2	7.9	8.8	16.2	12.2	13.1	11.3	57.0	60.5
10	8.3	10.4	9.8	12.3	17.2	13.5	12.0	11.2	52.7	52.6
11	12.1	14.4	10.5	11.3	14.8	14.5	11.6	12.4	51.0	47.4
12	18.4	18.4	13.4	11.9	15.0	12.3	10.3	10.0	42.9	47.3

TABLE 2B

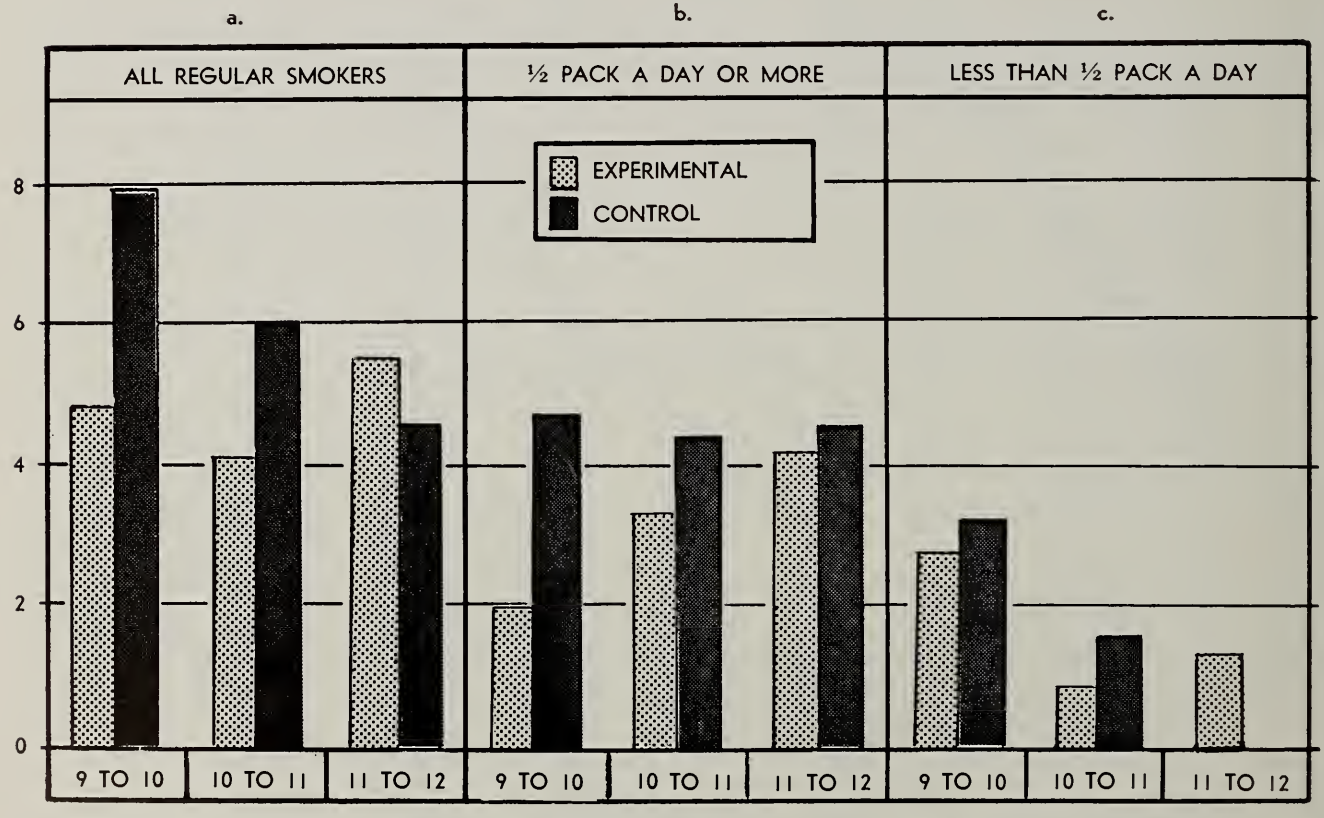
PERCENTAGE DISTRIBUTION OF STUDENTS BY EXTENT OF SMOKING HABIT AND BY SCHOOL GRADE, EXPERIMENTAL AND CONTROL SCHOOLS, OCTOBER 1961.

	EXTENT OF SMOKING HABIT							
High school grade	*½ pack a day or more*		*Less than ½ pack a day*		*Occasional**		*Never smoked*	
	Exp.	*Con.*	*Exp.*	*Con.*	*Exp.*	*Con.*	*Exp.*	*Con.*
9	6.3	5.7	7.1	9.1	42.4	40.4	44.2	44.8
10	8.8	10.0	9.7	9.8	42.0	41.5	39.5	38.7
11	14.2	13.9	12.1	12.7	40.4	42.2	33.3	31.2
12	19.8	19.1	11.8	13.5	40.8	41.0	27.6	26.4

*Definitions of occasional smokers were dissimilar between 1961 and 1962 hence are not comparable.

CHART 2

INCREASE IN PER CENT AGE OF REGULAR SMOKERS AS CLASSES ADVANCED ONE GRADE BETWEEN OCTOBER 1961 AND OCTOBER 1962 BY EXTENT OF SMOKING HABIT EXPERIMENTAL AND CONTROL GROUPS



Note that there were differences in definitions of occasional and non smokers between the two studies so that only the percentages of regular smokers are comparable from year to year.

Table 2A shows generally lower percentages of regular smokers and higher percentages of occasional smokers in experimental schools, and no important differences between experimental and control schools in the percentages of students who have stopped smoking or have never smoked.

Thus far the analysis has consisted of a vertical analysis of differences between experimental and control

schools. However, effects of the educational program can also be demonstrated through a horizontal, or cohort analysis. In other words, by examining the smoking habits of a group of students one year, and reexamining the same group of students subsequently, changes within the group itself may be demonstrated. This method has the advantage of taking measurements which are independent of any inherent differences in smoking habits between experimental and control schools.

A cohort analysis of this type indicates that 13.4% of students in grade 9 in experimental schools in October, 1961 were regular smokers. In October 1962 there were 18.1% of these same students who as 10th graders smoked regularly. Regular smokers therefore, increased by 4.7 percentage points during the intervening year. During the same period, regular smokers in the similar group of students in the control schools increased by 7.9%. The increase in regular smoking was 1.7 times as great in control schools as in experimental schools. See Chart 2.

The most important part of the difference occurred in heavier smokers in the 10th grade cohort in 1962. The increase in this group amounted to 2.0 percentage points for experimental schools as compared with 4.7 percentage points in control schools. The increase in control schools was 2.4 times as large as in experimental schools.

SUMMARY

A planned educational program regarding cigarette smoking and its effect on health is being administered to a group of high school students in the State of Maine. Another similar group of students is acting as a control group and is receiving no such educational exposures. Both groups are being surveyed by identical questionnaires at the beginning and end of each school year. This permits measurement of the value of this educational program. At the end of the first year of this study, no significant changes were noted in the smoking habits of either of the two groups. However, the first survey at the beginning of the second year of this study (October, 1962) revealed various changes in the smoking habits of the students in the experimental group. These changes are thought to be significant, and to result from the educational program which is being administered to this group of students.

COMMENT

The most significant change in smoking habits occurred in the youngest group of students, — the original ninth graders. There is evidence to lead one to believe that the tenth graders, the next youngest group, have also been influenced somewhat as to their smoking habits. The older groups of students (and adults?) are more difficult to convince and less likely to change. These facts stress the importance of starting a program such as this in as young a group as possible, if any real and lasting effects are to be made on the future habits and health of these children.

THAYER HOSPITAL CANCER SEMINAR

Wednesday, May 22, 1963

ROBERTS UNION, COLBY COLLEGE
Waterville, Maine

Moderator: PAUL A. JONES JR., M.D., Department of Obstetrics and Gynecology, Thayer Hospital.

9:00 **Registration**

9:30 **Practical application of physical principles to the care of surgical patients.**
HENRY T. RANDALL, M.D., Medical Director of Memorial Hospital and Chairman of the Department of Surgery.

10:30 **Tumors in Childhood.**
HAROLD W. DARGEON, M.D., Chairman emeritus, Department of Pediatrics, Memorial Hospital, New York City.

11:30 **The Guillain Barre Syndrome in malignancy states.**
GERALD KLINGON, M.D., Associate Attending Physician and Acting Chief, Neuropsychiatric Section, Department of Medicine, Memorial Hospital, New York City.

12:30 **Luncheon**
Roberts Union, Colby College

Moderator: STANLEY C. BECKERMAN, M.D., Director of Cancer Chemotherapy Service, Thayer Hospital.

1:45 **Welcome**
DR. ROBERT E. L. STRIDER
President, Colby College

2:00 **Some problems in the management of Prostatic Carcinoma.**
WILLET F. WHITMORE, JR., M.D., Attending Surgeon, Urology Service, Memorial Hospital, New York City.

3:00 **The effects of fibrin formation and alterations in the clotting mechanism on the development of metastases.**
EUGENE CLIFFTON, M.D., Associate Attending Surgeon, Thoracic Service, Memorial Hospital, New York City.

4:00 **Panel Discussion — New Concepts.**
GEORGE C. ESCHER, M.D., Associate Attending Physician, Medical Service, Memorial Hospital, New York City, chairman.

Maine Heart Association Notes

Approaches To The Treatment Of Hypercholesteremia

"There is every indication that a non-toxic agent capable of inducing an appreciable decrease in the serum cholesterol would have value in the treatment of patients with hypercholesteremia and xanthomatous skin lesions. The evidence is far less certain that such an agent . . . would be of benefit in the treatment or prevention of atherosclerosis; however, the many pharmacologic preparations and dietary regimens that have been devised to lower cholesterol reflect the widely held belief that such an approach . . . may have merit.

"Of the numerous drugs that have been developed for the treatment of hypercholesteremia, only a few are currently available for general use; these include nicotinic acid, sitosterol, estrogenic hormone, thyroid hormone, and heparin. . . . Neomycin . . . is not an appropriate agent for long-term treatment of hypercholesteremia.

"Diets designed to lower cholesterol have had far wider currency. . . . Such diets, if regularly followed, appear to be effective in lowering cholesterol levels in the majority of cases.

"Despite the current preoccupation with drugs and diets . . . it must be reported that the evidence that such measures are clinically useful remains inferential. At present, every decision to prescribe a cholesterol lowering drug or diet calls for a judgment from the physician that must balance such factors as safety, expense, and convenience against the possibility of future benefit. . . . Until more decisive evidence can be obtained . . ., such decisions will be difficult to make and even harder to vindicate."

(Bergen, S. S., Jr., and Van Itallie, T. B.: Ann. of Int. Med., 58:355-366, 1963)

Announcement

The annual meeting of the American Heart Association will be held October 25 through 29, 1963 at the Los Angeles Biltmore Hotel, Los Angeles, California.

There will be six sessions on clinical cardiology as well as the annual business meeting.

It is suggested that those wishing to attend, make reservations immediately with the American Heart Association, 44 East 23rd Street, New York City, N. Y.

INTERIM MEETING, M.M.A. HOUSE OF DELEGATES — *Continued from Page* 104

Dr. Hanley called attention to the increase in Blue Cross-Blue Shield rates and stated that information had been sent to all M.M.A. members on March 22. (This increase is to be effective with the quarter beginning May 8, 1963).

A Proposal that there be at least three meetings of the House of Delegates was opposed.

Kerr-Mills Bill: There was some discussion of the action of the Council at its February meeting "that at the present time the Council of the M.M.A. go on record as opposing proposed payment of fees for physicians for M.A.A. clinic patients in the State of Maine under the Kerr-Mills bill." It was agreed that we await the recommendations of Dr. Niles L. Perkins Multidisciplinary Committee to the Department of Health and Welfare. This committee is to work out the details and implement the present program and its proposed expansions. (See Report of Advisory Committee to Dr. Fisher re Kerr-Mills bill in March 1963 issue of The Journal of the M.M.A., page 64).

Liability Insurance: Dr. Hanley discussed the new classifications — 2 classifications for physicians and 2 for surgeons. He stated that a ten percent increase in premiums became effective April 3, 1963. He quoted actual experience figures for Maine from one large carrier of malpractice insurance which clearly demonstrated the need for the increased premiums.

The Interim Meeting of the House of Delegates was adjourned at 4:55 P.M.

Council Meeting — April 7, 1963

The Council of the Maine Medical Association met at 10:00 A.M., April 7, 1963 at Augusta, Maine, preceding the Interim Meeting of the House of Delegates. All members were present with the exception of Raymond E. Weymouth, M.D., Councilor for the Sixth District and Paul H. Pfeiffer, M.D., Alternate Delegate to the A.M.A.

The following special committees were appointed:

Committee on Long-Term Patient Care
Peter W. Bowman, M.D., Pownal - Chairman
Harold N. Willard, M.D., Waterville
George W. Wood, III, M.D., Brewer

Committee on Rehabilitation
John J. Lorentz, M.D., Bath - Chairman
John A. Woodcock, M.D., Bangor
Edward G. Asherman, M.D., Portland

Committee on Medicine and Religion
Clyde I. Swett, M.D., Island Falls - Chairman
Asa C. Adams, M.D., Orono
Martyn A. Vickers, M.D., Bangor

The members of the latter committee were appointed to serve for a 3-year term following which the committee will be set up so that one member will serve for one year, one for two years and one for three years.

The Financial Statement for fiscal year 1962 and Proposed Budget for 1964, which were discussed at the February meeting of the Council, were reviewed and approved for presentation at the Interim Meeting of the House of Delegates.

The Council agreed to approve in principle the efforts of the Medic-Alert Foundation relative to the problem of medical identification and Clyde I. Swett, M.D. of Island Falls was appointed to be in charge of this effort in Maine.

Dates To Remember . . . .

June 16-20, 1963

American Medical Association, Atlantic City

June 23, 24, 25, 1963

Maine Medical Association, The Samoset, Rockland

Necrology

JACOB M. JACKLER, M.D.

1923-1963

Jacob M. Jackler, M.D., 39, of Waterville, Maine died on March 27, 1963 in the New England Center Hospital, Boston, Massachusetts. He was born in New York City on May 15, 1923, son of Mr. and Mrs. Abraham Jackler.

Dr. Jackler received his medical degree from the Boston University School of Medicine in 1951. He interned at the Boston City Hospital, was a resident at that hospital and at the New England Medical Center and had studied under a U. S. Public Health Service Fellowship in cardiology at the Pratt Diagnostic Hospital in Boston. Dr. Jackler, a specialist in internal medicine, located in Waterville in 1955.

He was a member of the Maine Medical Association, the Kennebec County Medical Association and the American Medical Association.

Surviving are his widow, the former Marilyn Epstein and two children.

County Society Notes

LINCOLN-SAGADAHOC

April 16, 1963

The regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held on April 16, 1963 at The Ledges Inn in Wiscasset, Maine.

The highlights of the Interim Meeting of the House of Delegates were presented for thought; instructions to delegates will be promulgated at the May meeting.

Russell A. Morissette, M.D. of Lewiston spoke on the use of antimicrobials.

GEORGE W. BOSTWICK, M.D.
Secretary

PENOBSCOT

April 16, 1963

The Penobscot County Medical Society held its April meeting on April 16, 1963 at the Bangor House in Bangor, Maine. There were forty-two members and guests present with the President, Dr. Allison K. Hill, presiding.

William E. Schumacher, M.D., Director of the Bureau of Mental Health of Maine, was the guest speaker. He spoke on the Outpatient Care of Psychiatric Patients in the community and gave an interesting and stimulating presentation of the recent trends in psychiatrical care such as: rehabilitation of patients short of actual cure and the use of newer psychotropic drugs for better patient adjustment. He pointed out that actual care in mental hospitals is improving and that an important step in restoring the patient to a useful existence has been the realization that social, family, and community ties are vital to the therapeutic regime. It is found that 15% of the general population in any community suffers from psychotic illness and the deficiencies in solving this problem lie in lack of trained personnel, lack of funds for care, lack of research facilities and lack of actual housing means. He stressed the great help that any physician can provide by the use of psychotherapy in his own practice and outlined a plan for its use.

At the business meeting a report from the Interim Meeting of the M.M.A. House of Delegates was given by Nelson P. Blackburn, M.D. Discussion was held concerning various items of this report resulting in a vote of the society that its delegates be instructed at the June meeting to voice the societies opinion that: 1) the term of office of the Speaker of the House be limited to three years; 2) the Speaker of the House should not be a voting member of the Council; 3) the Speaker of the House should appoint reference committees and 4) the society is opposed to the increase of the budget of the State Association over its expected income by deficit financing and that the deficit not be met by an increase in dues.

Richard C. Wadsworth, M.D. announced that the third polio clinic for Type III oral polio vaccine has been postponed until the fall of 1963.

FREDERICK C. EMERY, M.D.
Secretary

New Members

AROOSTOOK

George M. Berberian, M.D., Van Buren
Lewis V. A. MacDonald, M.D., Washburn

CUMBERLAND

Harold N. Burnham, M.D., 130 Main Street, Gorham
John A. Godsoe, M.D., 19 Deering Street, Portland
Robert M. Morrison, M.D., 148 State Street, Portland
Nina B. Rubins, M.D., E. A. Center Memorial Clinic, Steep Falls
Talivaldis Rubins, M.D., E. A. Center Memorial Clinic, Steep Falls

KNOX

Fay K. Alexander, M.D., Camden Community Hospital, Camden

PISCATAQUIS

John T. Metcalf, M.D., 47 Elm Street, Milo

Deceased

ANDROSCOGGIN

Max Hirshler, M.D., 25 Bardwell Street, Lewiston, April 25, 1963

News, Notes and Announcements

State of Maine Board of Registration of Medicine
Secretary — George E. Sullivan, M.D.
Waterville, Maine

Physicians Licensed to Practice Medicine and Surgery in the State of Maine
March 12-14, 1963

THROUGH EXAMINATION

F. Jorge Abrantes, M.D., 48 Rand Ave., Buffalo, N. Y.
Romulo G. Beltran, M.D., Kings Park State Hospital, Kings Park, N. Y.
Raymond L. Casella, M.D., 1203 North St., Suffield, Conn.
Richard J. Chabot, M.D., The Springfield Hospital, Springfield, Mass.
Hsueh-Ching Ch'eng, M.D., St. Boniface General Hospital, St. Boniface, Manitoba, Can.
Robert J. Covas, M.D., New Jersey State Hospital, Marlboro, N. J.
Pieter de Jong, M.D., 533 Brant St., Burlington, Ontario, Can.
Christobal G. Duarte, M.D., The Univ. of Vermont College of Medicine, Burlington, Vt.
Bonifacio S. Dy, M.D., 1213 Court St., Utica, N. Y.
Selahaddin Erdogan, M.D., Harlem Valley State Hospital, Wingdale, N. Y.
Americo S. Fiore, M.D., 2-11 149th Place, Whitestone, N. Y.
Alfredo G. Fleurquin, M.D., 3392 Bishop St., Cincinnati, Ohio
Warwick L. Greville, M.D., 1003 Nott St., Schenectady, N. Y.
Mehmet Kaplan, M.D., Box 1453, Middletown, N. Y.
Aldo F. Llorente, M.D., 17 Linden Circle, Georgetown, Mass.
Takao Ohnuma, M.D., 277 High St., Buffalo, N. Y.
Mehmet Z. Ozpak, M.D., Box 1453, Middletown, N. Y.
Krishnasingh Panwar, M.D., 1578 McGregor St., Montreal, Can.
Esmail Rafi, M.D., 3801 Macomb St., Washington, D. C.
Felix M. Garcia-Rey, M.D., 393 State St., Bangor, Me.
Stanley D. Rosenblatt, M.D., 89 A Webster Ave., Chelsea, Mass.
Cresencio B. Sarmiento, M.D., Hudson River State Hospital, Poughkeepsie, N. Y.
E. Mei Shen, M.D., Children's Hospital Medical Center, 300 Longwood Ave., Boston, Mass.
Eduardo Lopez-Silvero, M.D., 82 Elm St., Waterville, Me.
Reginald B. F. Smith, M.D., Charles S. Wilson Memorial Hospital, Johnson City, N. Y.
Pedro A. Sequeira, M.D., Jersey City Medical Center, Jersey City, N. J.
Rustico C. Tongco, M.D., 14152 Superior Rd., Cleveland Heights, Ohio
Wilhelm H. J. van Deventer, M.D., 33 Depot Rd., Falmouth, Me.
Zia O. Vargha, M.D., 144-45 41st Ave., Flushing, N. Y.

THROUGH RECIPROCITY

Harold N. Burnham, Jr., M.D., 130 Main St., Gorham, Me.
Robert S. Gillcash, M.D., 143 Jefferson St., Hartford, Conn.
John F. McGinn, M.D., 25 5th St., Bangor, Me.
Katherine E. Reichert, M.D., Maine Medical Center, Portland, Me.

Annual Meeting, American Geriatrics Society

The 20th Annual Meeting of the American Geriatrics Society will take place at the Queen Elizabeth Hotel in Montreal, Canada on June 6-8, 1963.

E. David Sherman, M.D., General Chairman and Gustave Gingras, M.D., Executive Chairman will extend greetings to the group at 9:00 A.M. on June 6th followed by remarks from Richard J. Kraemer, M.D., President, American Geriatric Society.

An impressive scientific program concerning care of the aging has been arranged for this event from the opening panel on Co-Operative Efforts for Progress in Geriatrics at 9:20 A.M. on June 6th to the final program at 12:10 on June 8th.

For further information write to: William Hammond, M.D., Chairman of the Advisory Council, American Geriatrics Society, 10 Columbus Circle, New York 19, N. Y.

Book Reviews

Financing Medical Care: An Appraisal of Foreign Programs — By Helmut Schoeck, Ph.D. Published by Caxton Printers, Ltd., Caldwell, Idaho, 1962. Pp. 305. Price $5.50.

Professor Schoeck and his collaborators have succeeded in presenting a controversial subject objectively and rationally without making any lofty claims to impartiality. The seventeen contributors to the book (which is an outgrowth of meetings held by the Economic Research Advisory Committee of the American Medical Association) include eight physicians, four professional economists and social scientists, one is a lawyer and actuary, one is a priest and Professor of Catholic Moral Philosophy at the University of Bonn and three are professional journalists and political analysts.

The thesis might be stated as follows: "Before we, in the United States, embark on a program of state-medicine, let us pause to examine the experience of other countries who have tried this." The evidence, presented factually and well-documented, is that government-medicine does not, per se, produce a happy, beautiful world of medical economics. Rather, in the countries whose medical programs are examined (England, France, Germany, Austria, Sweden, Switzerland and Australia) there is frequently widespread dissatisfaction, and an attempt by the people to diminish the bureaucratic control of their medical welfare. This is not easy to do. Once established it grows and grows (witness our own veterans and farm programs).

It is interesting to note that, contrary to the protestations of its advocates, there has been no inevitable "march" towards state-medicine in civilized lands. The Swiss and Finns have repeatedly voted against it. Australia has developed a fine plan controlled by the Medical Association and based on private medical insurance plans. In Germany and Austria where

government medicine began seventy years ago — at a time when there was much fear that Marxism would capture the imagination of the people — there are now "professionally-sick" people who devote their lives to milking the state-welfare plan. At the same time, in these countries, there are industrious workers whose major incentive for raising their income is to be able to escape into a bracket wherein they can enjoy private medical care. New Zealand has gone to the peak as far as developing a state-controlled program of medical care. Their tax levy is the highest in the world. They are becoming disenchanted and their politicians now lose votes when they advocate "promised-cash benefits."

In England the cost of the National Health Service rose 13% in 1961 compared to the previous year and has reached $2.2 billion per annum or 14% of all government expenditures. In spite of this, many of the original free services have been dropped. At the same time, the number of subscribers to a large, private health insurance plan has grown from 65,000 when the National Health Service began to 850,000 last year. In Sweden, in 1961, there was public dismay when forty patients on the waiting list to the hospitals of Lund died before being admitted. In Germany quackery flourishes. Those who feel that what they get for nothing is not worth much more than that prefer to spend their own money on a charlatan than visit the state-employed M.D. In France and Austria the farmers are desperately trying to stay out of the state medical plan.

There are obvious advantages to pre-paid medical care. A program which requires the development of a large governmental bureaucracy grows indefinitely according to Parkinson's Laws and becomes increasingly inflexible and totalitarianistic. It is the most costly way of doing things. In contrast, the Australians have shown that a system of private medical insurance plans guaranteed by the government allows the individual to choose freely and with dignity preserved, the type of care he needs. The paper work of the Australian government's role in the medical plan is handled by fifteen to twenty people.

It is to be hoped that many physicians will read this book and encourage interested laymen to read it as well. After all, our future as independent physicians is at stake. The message is a sound one. Unfortunately, the bureaucrats and labor leaders who are pressing so hard for the central-control of this highly individualistic and humanitarian service will either not read the book or will ignore its implications.

PAUL H. PFEIFFER, M.D.
Waterville, Maine

Resistance of Bacteria to the Penicillins. Ciba Foundation Study Group No. 13 — Edited by A. V. S. DeReuck, M.S.C., D.I.C., A.R.C.S. and Margaret P. Cameron, M.A. Published by Little, Brown and Company. Pp. 125 with 14 illustrations. Price $2.95.

This booklet is the proceedings of a one-day conference held in Portland Place, England, under the sponsorship of the Ciba Foundation and under the chairmanship of Sir Charles Harington. The conference dealt with such topics as, mode of action of the penicillins, penicillinase, and penicillin resistance to different organisms. This booklet would be of considerable interest to all those working in the general fields of infectious disease and bacteriology.

CHARLES R. GLASSMIRE, M.D.
Portland, Maine

The Journal
of the
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Functions Of Area-Wide Planning As Seen In The Local Hospital†

Frederick T. Hill, M.D.*

Intelligent area-wide planning should and can be of utmost importance to the local hospital. At the same time is must be recognized that there are possible difficulties which may defeat easy acceptance of planning, largely because of implied or suspected regimentation, or of unwise satisfaction with the status quo.

The tremendous scientific developments of the past four or five decades have resulted in great advances in Medical practice which the institutions of 40 or 50 years ago could not begin to cope with. The demands of a Public, cognizant of the lessened mortality and lowered morbidity of disease, when properly cared for by these advanced methods in the modern hospital, have resulted in a great expansion of hospital facilities throughout the Country.

The passage of the Hospital Survey and Construction Act (the Hill-Burton Program) in 1946 was perhaps the biggest motivating force and resulted in the addition of some 242,228 hospital beds, plus 1700 units for outpatient care as of September 1961, often in areas previously lacking in needed facilities. It is impossible to over-emphasize the value of this program. While participation, according to the Act, was to be in accordance with a State Plan, revised each year, with priorities based upon need; unfortunately, this has not always been the case. At times, even in this program, we have seen hospitals poorly located; poorly orientated to meet the actual needs of the area; uneconomical to operate; unrealistically equipped; according to the professional skills which were, or could be made available.

Having served as Chairman of the State Advisory Hospital Commission of the State of Maine since its inception in 1947, I can testify from experience, to the above. While we have conscientiously tried to follow a well-thought out State Plan, I must confess we have made our mistakes. It is difficult at times, to withstand pressure groups, to get all needed information, to project the future with any degree of accuracy. There always seems to be a firm reluctance to allow any part of the Federal money to return to Washington, even if it cannot be used to meet a demonstrated need. Too often we have produced numerous 40-bed units, more or less strategically located and, too often, limited to facilities for acute care.

The following from a resolution of the Federal Hospital Council seems most pertinent:— "While there still is a need for additional general hospital facilities in some areas, the Council recommends to the Surgeon General that greater emphasis be given to meeting the needs for replacement and renovation of older hospitals, for hospital related long-term care facilities, for ambulatory facilities, and for areawide hospital planning."

One may well feel that the Bugbee Report should have come earlier, perhaps as a corrollary to the Hill-Burton Act, although the idea was implied in the "State Survey" portion of the law. Certainly we have needed these additional hospital facilities, and still need more of them, but better planning as to location, size, extent and type of services to be offered, would seem desirable. At times local pride or special interests may result in uneconomic duplication of facilities, or even poor professional practices because of the temptation to perform procedures requiring special skills which are not available.

Too often, in the local hospital, the emphasis has

†Presented at the "Working Conference on Methodology of Area-wide Planning for Hospitals and Related Health Facilities" Boston, Mass. Feb. 18, 1963

*From the Thayer Hospital, Waterville, Maine

been solely on the construction of acute beds, with no attention given to need for facilities for the geriatric patients, or for patients with chronic diseases. Too often, no consideration has been given to the development of out-patient facilities, of home care programs, or satisfactory nursing homes. Attention to these often may obviate the need for hospital admission, except perhaps for short periods for diagnostic studies; and thus decrease the amount of necessary in-patient facilities, expensive to build and to operate.

With the ever-increasing cost of construction and operation, the seemingly persistent scarcity of medical and paramedical personnel, with the resultant bidding for these services between hospitals; it would seem very important that careful and intelligent study be undertaken prior to construction of new hospitals; or expansion, or alteration of those already in operation. Hospital construction is so expensive that one cannot afford to make mistakes. Careful study is imperative. The answer would seem to be in areawide planning.

There are many questions to be answered if we are to have intelligent area-wide planning.

What do we mean by area? Town? City? County? State, or region thereof?

What are the needs of this area? What about the Future—20 years hence?

What is the type of hospital? What is its role, or role to be, in the area?

Is it a referral type of hospital, providing special services for a wide area? Or, is it a strictly community hospital? If the latter, what are its professional skills, and its equipment needs? If a referral type, what special services does it provide? What should it provide? What professional skills does it have? What could be developed?

Is there unnecessary duplication of expensive equipment?

How about transportation facilities? How about the migratory habits of patients?

Is it a teaching hospital? If not, should it be, at least with Continuation Education for its Staff? Would educational programs for the Public, as well as Medical and Paramedical groups be beneficial?

Is it interested in Research? If so, to what degree?

Does it provide out-patient services? Should it?

Could not this prevent unnecessary hospital admissions?

Could a Home-Care program prevent unnecessary admissions?

Could a Home-Maker Service prevent unnecessary admissions?

Could a Visiting Nurse Service prevent unnecessary admissions?

From our experience at the Thayer Hospital our answer to the above four questions is "YES."

Are there needs for facilities for care of geriatric or chronically ill patients?

Is there need for rehabilitation facilities? If so to what extent?

Could services extending out from the hospital, to the smaller out-lying hospital units, the nursing homes, the patient's home, result in better patient care, and avoid, to some degree, the necessity of expensive in-patient care?

Under a grant from the Office of Vocational Rehabilitation a study was made of Nursing Homes in this area which showed that 51 percent of the patients did not actually need nursing home care. Some had not needed this on admission. Others had been appropriately admitted, but were no longer in need of nursing care. They were custodial cases, left there to die. Frequently the nursing homes have considered themselves institutions for terminal care.

Should not differentiation be made between Nursing Homes and Custodial Homes? The nursing home, like the hospital, should be a functional unit of a spectrum of community care facilities needed for the appropriate treatment of the chronically ill. This role cannot be realized unless there be an organization of health services, such as should be possible with area-wide planning.

Can these questions be answered as of now, and hopefully for 20 years from now?

Areawide planning is not in itself a panacea. Planning alone will not produce results. There must be an acceptance, at least in principle, and hopefully in a major degree, followed by action, if our hospitals are to benefit thereby.

Certainly to be effective, it implies a certain amount of regimentation which may be repugnant to local hospital groups, but this would seem necessary if we are to preserve the voluntary hospital as we know it. Financing hospital construction and operation generally requires both private and government funds. Construction which is unnecessary, whether as to location, extent, or type, is bound to meet criticism and resistance in raising the necessary money. The cost of hospital care itself would seem to have reached a ceiling about as high as could be tolerated by the private patient, the insurance carrier, and the governmental source of payment. Unnecessary duplication can only result in higher costs.

So far at least, we seem to have a choice between voluntary regimentation through areawide planning, and enforced regimentation by centralized governmental agencies. While standardization with central control, may be desirable and efficient in industry, producing more at less cost; hospitals and the people whom they serve, and those who serve in them are quite different. Hospitals seek to be efficient but not necessarily by turning out more patients faster and at less cost. Patients are sick people, not units of trade, and need more than cold efficient production. And the people that serve, the doctors, the nurses, and all the other wonderful people who render care for the sick,—God knows they should not be expected to be always coldly efficient, working on a production line basis.

Hospitals generally present different images to both patients and to physicians. We should not attempt to cast all in one universal mold. Atmosphere, environment, and personalities appeal differently to patients and to doctors. Patients often will do better, and a higher quality of Medicine be practiced, in favorable environment. A smiling nurse, a pleasant room, good food, and a sympathetic understanding doctor, who is happy in his environment, themselves are good medicine. Complete centralized regimentation with standardized hospital, medical, and paramedical personnel, resulting in sterotyped institutions may have a

stagnating effect. Some variation, and sometimes even a little professional competition, may be worth while in stimulating improvement and advancement.

While we find many enthusiastic sponsors of small 30 to 40 bed hospitals, obviously limited in the services they can provide, often they are in small communities without other health facilities, and are stimulated by a sincere regard for the community's health. There is some justification for these, although in some instances the demand could be answered by the construction of community health centers, of perhaps 12 to 20 beds. Sick people generally will be happier and do better if they can be provided with services effectively in their own home communities. Often this can be accomplished in the smaller unit, in cases not requiring special skills. Sometimes the critical phase of illness or injury may be handled in the larger, well-equipped hospital, followed by transfer later to the home community unit. We are just beginning to develop services extending out from the hospital to these small units. These services can be both medical and paramedical.

On the other hand there rarely is justification for multiple small hospitals in any one of these smaller communities, as Dr. Anthony J. J. Rourke* has so forcefully stated, emphasizing the wastefulness and the liabilities "in pirating of personnel and duplicating of expensive equipment, in order to keep up with the Jones." Multiple small hospitals in a community generally mean multiple staff appointments. Dr. Rourke correctly states that this often results in great inconvenience and waste of time to physicians travelling from one institution to another, and at times being unavailable when urgently needed for some emergency. There is another liability for the hospitals in the tendency, at times, by certain physicians, to play one institution against the other, a habit generally harmful to both.

It would seem evident that the only way we can avoid unnecessary hospital construction, and duplication of expensive equipment, keep the cost of hospital care from ascending to the stratosphere and maintain the integrity of our medical and paramedical personnel, is by intelligent areawide planning. The results of this would benefit the hospitals, the area, improve the quality of patient care, and do much to preserve our voluntary hospital system.

The functions of areawide planning as seen by local hospitals are:

To make available authoritative information regarding the present facilities, needs, and potentials of the area, compiled by a broad group of qualified persons, representative of the best citizenry, including both professional and non-professional people; together with, as far as possible, estimates as to future conditions. To be truly effective this group would require the services of technical skills in allied fields. I would hope and expect this could be accomplished on a voluntary basis if conducted by the broad-type group referred to above. The very status of the group should be able to overcome pressure from within for over-building or for unrealistic facilities.

There are some 27 or more hospital councils and planning associations in this Country today and the number is ever increasing. One can point to successful examples in New York, Chicago, Baltimore, Cleveland, Columbus, Detroit, Kansas City, Los Angeles, Pittsburgh, Buffalo, Scranton, and Rochester, while now we are seeing the idea spreading beyond municipalities to counties, states, and even across State lines.

Certainly there would seem to be little reason for the local hospital, wherever situated, not to benefit from Areawide Planning.

*Rourke, Anthony J. J., M.D. Presented at First Meeting for Hospital Planning Chicago, Illinois, August 16, 1958

Dates To Remember . . . .

June 23, 24, 25, 1963

Maine Medical Association, The Samoset, Rockland

Special Article

Medical Opinion Survey Of Adequacy Of Medical Care*

Wilson G. Smillie, M.D.

In 1962 The Bingham Fund made a study of medical care in the State of Maine. Chapter XI of the report is a medical opinion survey of adequacy of medical care. The author felt that all the Maine physicians might be interested in the results of this opinion survey. It is reproduced therewith.

Any physician who desires to see the complete report may secure a copy by request to: The Bingham Fund, New England Medical Center, 171 Harrison Avenue, Boston, Massachusetts.

Our studies of the inadequacies in medical care in Maine are certain to have bias, due perhaps in some degree, to preconceived concepts which are based on past experience of the surveyor. It was felt that if anyone could judge the advances in medical care in recent years, and the defects in the medical care procedures in Maine at the present time, it should be the practitioner of medicine—he lives with them every day. He is heartened by progress and disheartened by frustration. Thus, if a representative group of practicing physicians would consent to give us an opinion of the status of medical care in their areas, we felt we would be able to make an analysis and summary of these opinions and secure a consensus of doctors as to what advances have been made in recent years, and what the important problems are that face us today.

PROCEDURES

We first selected a list of 17 important inadequacies in medical care that we have encountered in other communities in the United States. We then obtained a more or less random sample of Maine physicians and asked them to give us their frank opinion on the extent to which these deficiencies applied to their areas.

Medical Opinion Study
State of Maine
What in your opinion are the important inadequacies in the care of the sick in Maine?
Listed below are *important* inadequacies that are encountered in *other areas* of the U. S. A. What in your opinion is the situation in *your area?*

	CHECK True	CHECK Not-true
1. Patients with chronic illness remain too long in general hospital beds. Occasional only or important factor.	.....	.....
2. More expert nursing care is needed for chronic illness in the home.	.....	.....
3. Shortage of bed facilities for the care of chronic illness (especially arthritis heart disease.)	.....	.....
4. Medical follow-up of patients after hospital discharge is inadequate.	.....	.....
5. Inadequate facilities for dental care of adults.	.....	.....
6. *Rehabilitation* facilities for the chronically ill are inadequate in this area.	.....	.....
7. Patients are discharged prematurely from hospitals because of bed shortage.	.....	.....
8. Many patients are admitted to hospitals in whom home care would be more appropriate.	.....	.....
9. Insufficient provision for psychiatric care in general hospitals.	.....	.....
10. X-ray and laboratory service is not readily available.	.....	.....
11. Additional provision is needed for care of children with chronic illness.	.....	.....
12. More low cost hospital beds are needed for care of acute illness (in your area).	.....	.....
13. Medical care is too highly specialized (in your area).	.....	.....
14. Nursing Care is inadequate in the general hospital in your area.	.....	.....
15. "Nursing Home" care in your area is adequate.	.....	.....
16. Facilities for detecting and care of cancer patients are adequate.	.....	.....
17. Medical care in the following specialties is not adequate in your area:		
A. General Surgeon	.....	.....
B. Obstetrics & Gynecology	.....	.....
C. Ophthalmology	.....	.....
D. Orthopedics	.....	.....
E. Pediatrics	.....	.....
F. Psychiatry	.....	.....
G. Other (specify) ..... *For Example*: Internal Medicine, Pathology	.....	.....

Important

A. What in your opinion is the greatest advance that has been made in medical care in your area during the past five years?

B. What is the most important *un-met need* in the provisions that have been made for the care of the sick in your area?

C. I devote most of my time to: general practice ..... or: specialty of .....

D. My hospital affiliation is: .....

OPTIONAL:

E. Signature: .....

More than 100 physicians have responded. They reside in widely diverse areas of the State; one-half are from the large medical centers such as Portland, Lewiston, Augusta, Waterville and Bangor, and many of this group are specialists. The remaining half come from small communities and rural areas, and most are general practitioners.

In addition to the specific questions that we asked

*From Study of Medical Care in the State of Maine 1956-1962, Chapter XI.

each physician, we also asked him to state what, in his opinion, had been the most important gain in medical care in the last decade in his area, and what was the most important unmet need at the present time. Each physician was asked to give his hospital affiliation and his specialty if he had one—or if not, where he worked as a general practitioner. Since conditions and facilities may be quite different in rural areas as contrasted to the larger medical centers, we have analyzed the results separately. The cross section of opinion represents more than one of each ten physicians who are in active practice in the State.

Physicians are famous for their independent thinking. In any survey of medical opinion, one can be sure that there will be a great variance of ideas. If one finds an agreement among three-fourths of a physician group on any subject whatever, then the conclusion has real validity. As noted above, seventeen propositions were presented to the doctors. We have summarized those in which the doctors were, or were not, in accord under five groupings.

The results from physicians of the larger medical centers:

PROPOSITIONS WITH WHICH PHYSICIANS ARE IN ACCORD:

Proposition 1: Patients with chronic illness remain too long in general hospital beds.

The group who answered this proposition were quite emphatic that this statement was true. More than three out of four said that is was an important defect of hospital practice.

Proposition 2: More expert nursing care is needed for care of chronic illness in the home.

We were surprised to find that over 80% of the physicians were cognizant of the necessity for a more extensive community program of home nursing. Our own observations are in full agreement about this defect in the medical care structure of Maine.

Proposition 3: There is a shortage of bed facilities for the care of chronic illness—particularly arthritis and heart disease.

Three-fourths of the physicians believed that this was an unmet need in their area. One reason, of course, is that Maine has proportionately more chronic illness than almost any other state in the union, because of an aging population.

Proposition 4: Many patients are admitted to general hospitals for whom home care would be more appropriate.

Over three-fourths of the physicians believed that this was true. Some pointed out that it was due, in part at least, to patient demand for hospitalization because the patient had hospital insurance. When a diagnostic work-up has been suggested, the insured patient has insisted that he have the privileges of a hospital bed instead of hospital day care, or clinic care, which would have been quite adequate.

Proposition 5: There is insufficient provision for psychiatric care in general hospitals.

This proposition is so obvious that it was overwhelmingly approved by physicians. There are very few psychiatrists in the State, almost none in the northern half. Even in those areas where the hospital has a psychiatrist on the staff, the physicians felt that more provisions should be made for care of psychiatric patients in the hospital. Until recently, physicians in Maine, particularly in rural areas, were somewhat prejudiced against psychiatry as a specialty. This attitude is changing.

Proposition 6: Nursing home care in your area is inadequate.

Almost all the physicians stated that this proposition is true. They are quite right in our opinion. This is one of the important, unsolved problems in the care of the chronically ill in Maine, and in most of the other states as well.

Proposition 7: Facilities for detection and care of cancer patients are adequate in your area.

Over three-fourths of the doctors were satisfied with cancer detection and care in their area. Those of the profession who know this subject best, including the Department of Cancer Control of the State Department of Health and Welfare, are quite sure that cancer detection is in its early stages in this State and is, as yet, quite inadequate. From our own observations we must agree that an adequate program is just in its beginnings.

EQUALLY DIVIDED OPINIONS OF PHYSICIANS:

About one-half of the physicians felt that the following propositions were true; the others did not.

Proposition 8: Medical follow-up of patients after hospital discharge is inadequate.

Certainly this is not as great a problem in Maine as it is in large cities where there are extensive out-patient facilities in which there is little follow-up of patients. Physicians in small communities do follow their patients well after hospital discharge.

Proposition 9: Rehabilitation facilities for the chronically ill are inadequate in your area.

Nearly half of the doctors are unaware of the great value of rehabilitation facilities in chronic illness. With a few exceptions, there are no truly well-organized rehabilitation units in Maine. The Thayer Hospital has a very fine, well-planned rehabilitation service, and there is a well-developed service at Hyde Hospital in Bath. A few other larger hospitals are now developing this type of service, but rehabilitation as an essential ingredient of patient care is not carried out at present by many doctors in Maine.

Proposition 10: Additional provision is needed for care of children with chronic illness.

About half the doctors felt that this was true. It is certainly less important than it used to be, since poliomyelitis and tuberculosis have declined. Rheumatic fever is not an outstanding factor in the illness of chil-

TABLE 2

BASIC DATA ON MAINE PEOPLE

County	Population Total	Population Per Sq. Mi.	Area Sq. Mi.	Per 1000 - 1960 Birth Rate	Per 1000 - 1960 Death Rate	Annual Median Income of Families Income In dollars	Per capita income, comparative rank
Androscoggin	86,312	180.2	478	22.5	10.9	$5,133	3rd
Aroostook	106,064	15.4	6,805	28.5	7.4	4,093	14th
Cumberland	182,751	207.4	881	23.2	11.4	5,477	1st
Franklin	20,069	11.1	1,717	23.7	12.1	4,657	9th
Hancock	32,293	20.1	1,542	20.4	14.1	4,176	13th
Kennebec	89,150	103.0	865	22.5	11.4	5,101	5th
Knox	28,575	78.3	362	18.4	13.7	4,371	11th
Lincoln	18,497	40.2	457	20.8	13.1	4,177	12th
Oxford	44,345	21.5	2,085	23.5	11.9	5,078	7th
Penobscot	126,346	37.2	3,408	28.3	9.8	5,102	4th
Piscataquis	17,379	4.2	3,948	22.1	13.0	4,383	10th
Sagadahoc	22,793	88.2	257	23.6	12.5	5,281	2nd
Somerset	39,749	10.3	3,948	23.1	12.0	4,657	8th
Waldo	22,632	30.6	734	24.5	13.2	3,995	15th
Washington	32,908	12.2	2,553	21.3	12.9	3,505	16th
York	99,402	99.4	1,000	21.7	11.4	5,088	6th
State of Maine 1960 U. S. Census	969,265	31.1	39,040	24.0	11.1	$4,873	

dren in Maine. Facilities for care of birth injuries and defects are improving yearly.

Proposition 11: More low-cost hospital beds are needed for care of acute illness in your area.

One-half of the doctors felt that this was true. Many citizens in Maine have a relatively low per capita income as compared with other states. Some rural areas of Maine are quite poor (Table 2). Hospital insurance is not as widely adopted in Maine as in many other states. Hospital costs for acute illness are rising steadily, and thus many seriously ill patients encounter financial difficulty in securing hospital care.

Proposition 12: Nursing care is inadequate in the general hospital in your area.

One-half the doctors felt that this was true. The same story is encountered throughout practically all areas of the United States. It is certainly a less pressing defect in medical care in Maine than in most other areas.

CONCENSUS OF PHYSICIANS ON SATISFACTORY SERVICES:

Certain services were indicated as satisfactory by the group of physicians. They were emphatic that certain aspects of medical care that are often inadequate in other states are satisfactory in Maine.

Proposition 13: Patients are discharged prematurely from hospitals because of bed shortage.

As the doctors pointed out, this is almost never true in Maine. Our hospital analysis shows that Maine has built general hospital beds beyond community needs in many areas, and thus bed shortage seldom occurs.

Proposition 14: X-ray and laboratory services are not readily available.

This is not true in Maine. During the past decade there has been a remarkable development of diagnostic laboratories and x-ray facilities that have supplied the needs for good medical care in a highly satisfactory way in practically all areas of Maine.

Proposition 15: Medical care is too highly specialized in your area.

Less than 10% of physicians felt that this was true, despite the marked trend from general practice to specialization in recent years. Most physicians feel that this situation is desirable and has promoted more adequate medical care.

MOST IMPORTANT IMPROVEMENTS IN MEDICAL CARE IN MAINE:

Proposition 16:

We asked the physicians to indicate the most important advance in medical care in the past six to 10 years in their areas. The answers were quite diverse. The most frequently mentioned were: 1) a new general hospital, 2) more available hospital beds, 3) better x-ray and laboratory facilities, 4) better specialist coverage, and 5) the development of rehabilitation as a new and important therapeutic facility.

Other factors mentioned were: development of mental health clinics, establishment of intensive care units, development by hospitals of in-service programs for physician education, development of clinic services by hospitals and initiation of psychiatric services. One physician stated that development of good roads was the most important of all in the promotion of medical care in Maine in recent years. He was right, of course, for good roads have brought specialists' services, clinic

services and rapid care of accidents and emergencies much closer to the patient and have made home care much more available.

MOST IMPORTANT UNMET NEEDS:

Proposition 17:

We asked each physician to indicate what, in his opinion, was the most important unmet need in medical care in his area. Again the opinions were diverse, but they were thoughtful and penetrating.

The needs that were indicated most frequently were:

1. More adequate facilities for care of chronic illness with special emphasis on rehabilitation.
2. Improvement in the quality of nursing home care.
3. Lack of psychiatric care both in and out of the general hospitals.

Other needs that were stressed by a considerable number of physicians were:

1. More opportunity for postgraduate education.
2. Insurance coverage for diagnostic work-up in the out-patient clinic.
3. Adequate care of alcoholism.
4. More graduate nurses.
5. Need of a convalescent facility as a bridge between the general hospital and home care.
6. Lack of medical personnel for rural areas.

One physician felt that the high cost of medical care, particularly hospital care, was a great handicap to adequate medical services in Maine.

ADEQUATE MEDICAL CARE IN SMALLER COMMUNITIES IN MAINE:

This summary represents 45 opinions of physicians from the smaller communities. For the most part, the response from physicians in the rural areas in Maine agreed with those from the larger centers. In some instances, however, there were striking differences. A most important unmet need noted by the rural doctors was rehabilitation facilities. Nine of ten physicians considered this an important defect in medical care.

Rural physicians were even more insistent about the need for adequate psychiatric care. They also agreed that patients with chronic illness remain too long in general hospitals but that this factor was less important in rural areas than in the cities.

The problem of inadequacy of bed facilities for chronic illness was common to both areas but is less acute in the rural areas. Both groups were insistent that more expert nursing care is needed for the chronically ill in their homes.

Nearly two-thirds of the smaller community physicians feel that more low cost hospital beds for the acutely ill are required. This one might expect, since the problem is more acute in rural areas, largely because the economy is lower than in the cities.

The rural physicians were in complete agreement with their city colleagues concerning the satisfactory services that had developed through the availability of the x-ray and laboratory facilities. They are certain also that specialization has not been carried too far in the rural areas, in fact, not far enough. They also agree that the discharge of hospital patients prematurely in the rural areas is not important.

About one-half the rural group agreed, with a like proportion of city doctors, that the care of children with chronic illness is adequate in their area. The rural physicians are much better satisfied with *nursing home* care than are their city colleagues, and are less well satisfied about facilities for *detection and care of cancer* than the city group. However, the differences of opinions here are not striking in the two groups.

In the rural areas there is a growing recognition of the need for specialty services. The city physicians expressed some need for psychiatry and ophthalmology, and to a lesser degree orthopedics and pediatrics. On the other hand, practically every small-community physician insisted on the crying need for psychiatric services in his area. They also believed that other important specialist needs are: ophthalmology, orthopedics, pediatrics, pathological services, and in some areas, internal medicine.

There is no question but that the replies to the questionnaire indicate that the trend toward specialization meets the approval of most physicians in rural areas as well as those who practice in the larger medical centers.

The general question that was asked concerning greatest advances that had occurred in medical care in the rural areas brought out a diversity of answers. Nine doctors were pleased with their new hospital and six more mentioned improvements in local hospital facilities. A considerable number indicated the improvement of x-ray and laboratory facilities as of high importance.

Specialization in smaller communities was considered a most important factor in improved medical care. Examples were better surgical coverage of the advent of pathology, anesthesiology, psychiatry and trained hospital administrators. One physician felt that the most important advance in his area was closer cooperation of physicians. Another stated that a striking advance had been made through better community support of the hospital. A third said that there had been *"no improvement at all"* in medical care in recent years in his area.

One would anticipate great diversity of opinion in the smaller communities since they vary so much in their density of population, their economy, their leadership and many other factors.

The most important unmet needs in medical care in the smaller communities were stated as follows:

1. Lack of facilities for adequate care of the chronically ill.
2. The need of good nursing homes.
3. Lack of sufficient numbers of general practitioners.
4. Difficulty in securing qualified, well-trained nursing services.
5. Dearth of available specialists' care, notably internal medicine, psychiatry, pediatrics, pathology, and in a few areas, surgery.

One area only stated a need for laboratory facilities; another was interested in an intensive care unit in the hospital; the need for rehabilitation facilities was noted, as was an adequate diagnostic out-patient clinic. One doctor felt the need of a facility for convalescent care.

A physician in one rural area stated that the greatest unmet need in medical care in his area was "a stable economy." This is also true of other regions in the United States far removed from rural Maine.

SUMMARY

One must confess that a true consensus of Maine practicing physicians cannot be obtained from a sample of one doctor in ten, no matter how representative his opinion may be. Nevertheless, certain broad conclusions may be drawn from a summary and analysis of the opinions that will have real validity.

Great advances have been made in Maine in recent years in the *quality* of medical care that is provided, specifically through the construction of modern hospitals and improvements in existing ones. Furthermore, there has been a wide development of diagnostic facilities, particularly x-ray and laboratory.

The trend toward specialization is unmistakable. It is accepted by physicians, since it means that better coverage of specialists' services will be made available to a much larger number of people. Specialization means more highly trained medical personnel. This trend has led to advances of in-service continuous medical education of the doctors in the state.

Better special facilities have been introduced, chiefly in rehabilitation, skilled anesthesiology and pathology. Advances in nurse training have occurred. A few areas have obtained much needed psychiatric services. All these changes and many more have occurred within recent years. The actual number of practicing doctors in Maine *has not increased* but practicing doctors and their medical care associates work much more effectively, with the result that services rendered have greatly improved.

The most outstanding defects in the medical care system in Maine are brought out clearly by the medical opinion survey.

The lack of adequate facilities to meet the increasing problem of medical care of chronic illness, particularly among the elderly, is perhaps the greatest unsolved problem, as it is in the nation. Convalescent facilities are almost non-existent. Nursing homes are inadequate. There are almost no available trained nurses for skilled home nursing care of the chronically ill.

Rehabilitation service for those disabled with chronic illness is in its early stages of progress.

Psychiatric services are becoming available, and the whole field of mental health promotion has had an initial, but encouraging, development in recent years.

Thus the opinion survey has given us a fine perspective of things past and things to come in the development of adequate medical care in Maine. The authors wish to thank those doctors who gave us their keen and frank opinions on matters with which they are so familiar. Their judgments are a most useful guide for the future development of medical care in the state.

Official Directory Available

An official directory of the 60 birth defects and arthritis treatment and study centers financed by The National Foundation—March of Dimes and its local chapters is now available to physicians and others in related professions.

Nationally there are centers in 32 states and the District of Columbia.

Detailed information is given concerning each center's staff, categories of cases that can be treated, scope of care available, coordinated research and teaching activities, methods of admission and methods of referral.

Purpose of the directory, according to Dr. William S. Clark, director of The National Foundation's Medical Care Department, is to acquaint the medical and allied professions with the purposes and scope of the exemplary care program sponsored by the Foundation.

The directory consists of a brief explanation of the medical program objectives and a description of the work of each center listed alphabetically by state.

Copies of the directory may be obtained by writing . . . Ed Pert, State Representative, The National Foundation, 128 State Street, Augusta, Maine.

State Of Maine

Department of Health and Welfare

DEAN H. FISHER, M.D.
COMMISSIONER

Syphilis Serology

CHARLES H. OKEY, Ph.D.*

Physicians using the laboratory for procedures designed to assist them in the diagnosis of syphilis now have access to an array of tests which represent a considerable improvement over the older tests. Preliminary serologic screening with non-treponemal antigen is an inexpenseve, rapid and accurate means of detecting syphilis. For those cases in which a result is at variance with the physician's evaluation of the patient, further testing with a more specific technic using a treponemal antigen is available.

Syphilis serology has come a long way since the early days of this century when Wasserman applied the principle of complement fixation in a test using a syphilitic stillborn liver extract as an antigen. It was soon found the extract did not depend upon the presence of spirochetes for serologic activity and that normal tissue extracts, particularly those from beef heart, possessed equal or better reactivity. For many years serologists used these lipoidal antigens in complement fixation and other tests. Twenty years ago the specifically reactive material, cardiolipin from beef heart muscle, was purified and characterized. This material, in a precise qauntitative combination with cholesterol and lecithin, has become the standard antigen for the non-treponemal tests, particularly the widely used VDRL test, in the form of a slide flocculation test.

Contrary to almost all serologic diagnostic procedures, the standard tests for syphilis (S.T.S.) are non-specific in that the antigen is not the etiologic agent of lues and the so-called antibody, reagin, is not truly an antibody. Reagin appears in the blood during the course of syphilitic infection and combines in vitro with the S.T.S. antigen in a specific manner despite the lack of direct evidence of its immunochemical function in syphilis. Unfortunately, reagins of similar chemical and physical properties may appear in the serum of patients having yaws, leprosy, malaria, infectious mononucleosis, various collagen diseases, fever, jaundice or recent immunizations. False reactive reports resulting from the presence of reagins unrelated to syphilis emphasize the necessity of using the serology report as only one aspect of syphilis diagnosis. A diagnosis of syphilis based only on a reactive report from the laboratory without correlation with the complete clinical and epidemiologic pattern is subject to considerable error. Currently, results reported by the laboratory are expressed in terms of "reactive," "weakly reactive" or "non-reactive" instead of "positive," etc. This nomenclature was adopted in order to completely avoid diagnostic connotations.

A number of modified slide flocculation tests have been devised in recent years to meet the criteria of a more rapid procedure or of a test to be applied under field conditions such as screening migratory farm workers. These are named: the rapid plasma reagin (RPR), the unheated serum reagin (USR) and the plasmacrit (PCT) tests. The latter test is being used in a few laboratories in Maine as a screening test. It has the advantage of utilizing the plasma remaining from the microhematocrit test. Serums reactive in this test must be retested with a standard test because the PCT is somewhat more sensitive and may result in a false reactive result. Conversely, a false negative finding is an extremely rare occurrence.

In addition to the qualitative VDRL test which indicates the presence of reagin without regard to the amount, a quantitative procedure is used to determine the relative reactivity of a serum when serially diluted. Flocculation in the highest dilution is recorded in terms of "dil" units. A serum reactive when diluted 1:2 is reported as 2 dils; a serum reactive when diluted 1:4 is reported as 4 dils, etc. The titer of reagin in the serum is not a measure of the extent or severity of the disease. Indeed, 10 to 20% of the cases of late syphilis will show no trace of reagin in the serum. A rise in titer in the presence of a darkfield negative chancre type lesion is indicative of early syphilitis. A falling titer, without treatment, indicates a false reactive result. Titers are useful in diagnosing congenital syphilis. An infant reagin titer that falls over a period of the first three months of life indicates the gradual loss of reagin passively transferred from the mother and the absence of active syphilitic lesions. Finally, quantitative tests may be used to follow the course of therapy. The qualitative test may remain reactive long after the therapy is completed but a quantitative test usually shows a considerable reduction in titer as a result of treatment.

The first serologic test to employ a treponemal antigen was the Treponema pallidum immobilization test (TPI) described by Nelson and Mayer in 1949. Treponemes cultivated in rabbit testes were combined with complement and patient serum, incubated and examined microscopically for loss of motility. Motility loss was

*Director, Diagnostic Laboratory

ascribed to the effect of specific antibody against the treponemes. Investigation showed that the antibody active in the TPI test was different from the reagin of the flocculation tests and probably is a true antibody for the spirochete. Evaluation demonstrated the test to be a reliable procedure with the highest degree of specificity yet achieved with any syphilis diagnostic procedure. Excessive cost is the principal disadvantage of the test so that only problem serum specimens are subjected to this type of examination. Furthermore, only a few laboratories in the country are equipped and staffed to provide the service. Other tests utilizing living virulent treponemes have been developed and shown to be useful but the TPI remains as the most widely used definitive serologic procedure. The TPI remains reactive for much longer periods of time than do the reagin tests, hence, it is not recommended for following the effects of therapy.

Extracts of treponemes cultured in artificial media have been used as antigens in complement fixation tests with a resultant increase in specificity over the conventional tests of this type. The Kolmer Reiter protein (KRP) and Reiter protein complement fixation (RP-CF) tests are examples of this type of technic. A reactive result with either of these two tests has been found to be strong evidence for a diagnosis of syphilis. Non-reactive results are not regarded as significant. Tests with these antigens are reactive earlier in the disease than is true with the TPI test.

The fluorescent treponemal antibody (FTA) test was described first in 1957 as a method using nonviable virulent T. pallidum as an antigen and approaching the TPI test in sensitivity and specificity. The test is performed by allowing diluted patient serum to react on a slide with a fixed smear of treponemes. Excess serum is washed off and fluorescein—tagged human antiglobulin is added. If the patient serum contains syphilis antibody, the tagged antiglobulin combines with the antibody adsorbed to the organisms. Examination with the darkfield microscope, equipped with an ultra-violet light source, shows fluorescent treponemes; this constitutes a reactive finding. The major advantage of this test over the TPI is the use of a non-living antigen which is available commercially and stable on storage. Also, the test is not so technically demanding as the more delicate TPI. An earlier disadvantage of cross reactions between T. pallidum and antibodies to normal oral treponemes found in many individuals has been largely eliminated by changes in technic. Evaluation of the modified procedure is being performed currently with indications that the FTA will become the standard definitive test in syphilis serology.

With this general background of the serologic tests for syphilis, a discussion of the services provided by the Diagnostic Laboratory should be useful to the physicians of Maine. At present, the VDRL test, both qualitative and quantitative, the Hinton and standard Kolmer tests are available on a routine basis. KRP tests are carried out on those serums representing diagnostic problems to the physician but only on his request. FTA tests will be used in the future on request from the physician.

Some changes in the program are being considered. The need for a battery of tests is not as important as it once was, considering the availability of the more specific tests. While a multiplicity of procedures reduces the probability of technical error, the use of several tests requires the maintenance of a high level of performance in as many testing technics. It is believed that a more valuable contribution to the physician may be made by concentrating on a smaller array of tests, these tests being selected as those having a high degree of sensitivity for screening purposes and a high degree of specificity for confirmatory purposes.

From the physician's point of view, the "triple-test plan" of Carpenter[1] is recommended. In this plan, serums are screened with the VDRL test. Patients with nonreactive serums are considered to be free from syphilis provided there is no history or clinical manifestations of the disease. Reactive and weakly reactive serums are examined with the KRP test and if similar results are obtained with this test, present or past syphilis is indicated. Serums showing nonreactive findings with the KRP should be subjected to a TPI test.

The Diagnostic Laboratory believes it has a responsibility to provide assistance to the laboratories of the state in the area of syphilis serology. This assistance is in addition to the implementation of the state statute allowing the Bureau of Health to approve certain hospital laboratories for the performance of pre-marital blood tests for syphilis. As a first step toward reaching these objectives, the Diagnostic Laboratory, in cooperation with the Maine Association of Medical Technologists, carried on a syphilis serology workshop on April 20, 1963, at the Augusta State Hospital. A bacteriologist from the Venereal Disease Research Laboratory in Atlanta, Miss Alwilda L. Wallace, provided the instructional phases of the program. An evaluation program for the laboratories approved for premarital serology will be put into operation in July of this year. Technicians wishing to receive training in syphilis serology at the Diagnostic Laboratory may make arrangements for this through their pathologist or directly to the Director of the Laboratory in Augusta.

[1]Carpenter, C. M., Miller, J. N. and Boak, Ruth; N. E. Journal of Medicine, 263: 1016, 1960.

Program . . .

110th Annual Session
Maine Medical Association

Sunday - Monday - Tuesday
JUNE 23, 24, 25 — 1963
The Samoset, Rockland, Maine

Program

Arranged by the Scientific Committee

JAMES E. POULIN, M.D., Waterville, Chairman

ROBERT L. OHLER, M.D., Togus

ALBERT L. HUNTER, M.D., Rockland

Dr. Poulin

Information

Registration:

Registration throughout the session will be in the Lobby at The Samoset. Registration fee $1.00.

Sunday	June 23 — 9:00 A.M. to 5:30 P.M.
Monday	June 24 — 9:00 A.M. to 5:30 P.M.
Tuesday	June 25 — 8:30 A.M. to 5:30 P.M.

Telephone: The number at The Samoset is Rockland, 594-8411.

Visiting Delegates:

Introduction of Visiting Delegates will take place at meetings of the House of Delegates on Sunday, June 23 or at the General Assembly, Monday afternoon, June 24.

Special Exhibits

A list of these exhibits, which will be located in the Ballroom, will be found on page 18 of this program.

Technical Exhibits

The fourty-four companies which make up the Technical Exhibits are listed on pages 19 through 22. Please visit these exhibits at every possible opportunity and show your appreciation for their support of the Maine Medical Association. These exhibits are easily accessible as you pass through the lobby enroute to the Ballroom (where the Scientific Sessions will be held) to the Dining Room or to the Golf Course.

Sponsor:

The speakers for the scientific programs are supported in part by a grant from Eli Lilly and Company.

Sunday, June 23

9:30 A.M. First Meeting of the House of Delegates

Call to order: ERNEST W. STEIN, M.D., President-Elect

Speaker of the House: LINUS J. STITHAM, M.D.

12:30 P.M. Luncheon

3:00 P.M. Second Meeting of the House of Delegates

6:30 P.M. Dinner

Speaker: MR. FRANCIS W. HATCH, Boston, Massachusetts and Castine, Maine

Subject: **Observations From The Sidelines As Seen By A Hospital Trustee**

A writer of ballads and articles on Maine History with special emphasis on Castine, Mr. Hatch is a Trustee of the Massachusetas General Hospital and President and Treasurer of the Castine Community Hospital.

Mr. Hatch

Monday, June 24

Scientific Program

Presiding—JAMES E. POULIN, M.D.

10:00 A.M. **Hypnotherapy in Psychosomatic Disorders — A Practical Approach in General Practice**

WILLIAM S. KROGER, M.D., Beverly Hills, California — Past President, The Academy of Psychosomatic Medicine, Advisory Editor, International Journal of Clinical and Experi-


Dr. Kroger


Dr. Gibbons


Dr. Herrick


Dr. Neer


Dr. Porter


Dr. Drake


Dr. Baker


Governor Reed

mental Hypnosis, Journal of Psychosomatics, and Western Journal of Surgery, Obstetrics and Gynecology.

11:00 A.M. **Cancer Panel**

Moderator, JOHN F. GIBBONS, M.D., Radiologist, Portland

Participants: EMERSON H. DRAKE, M.D., Surgeon, Portland; STANLEY E. HERRICK, JR., M.D., Internist, Portland and JOSEPH E. PORTER, M.D., Pathologist, Portland

12:00 NOON to 2:00 P.M. Luncheon

Scientific Program

Presiding—ROBERT L. OHLER, M.D.

Sponsored by the Maine Chapter, American College of Surgeons and Maine Trauma Committee

1:30 P.M. Business Meeting, Me. Chap. Am. Coll. of Surgs.

2:00 P.M. *Chairman*, DEXTER E. ELSEMORE, M.D., Dixfield, President, Me. Chap. Am. Coll. of Surgs.

Tumours and Humours

WILLIAM H. BAKER, M.D., Massachusetts General Hospital, Boston, Massachusetts

3:00 P.M. *Chairman*, LAWRENCE CRANE, M.D., Portland, for the Maine Trauma Committee

The Surgical Treatment of Hip Fractures

CHARLES S. NEER, II, M.D., Assistant Professor of Orthopedic Surgery, Columbia University, New York, New York

4:00 P.M. **General Assembly**

Presiding, RALPH C. STUART, M.D., President

Election of President-Elect

6:00 P.M. to 7:00 P.M. Social Hour, Dutch Treat, Ballroom

7:00 P.M. Annual Banquet

Presentation of Honorary Pins

Speaker: GOVERNOR JOHN H. REED

Tuesday, June 25

Scientific Program

Morning Session

Presiding—ALBERT L. HUNTER, M.D.

9:30 A.M. **Principles of Teaching Machines**

MR. HIRAM NICKERSON, Health Education Associate, The Medical Foundation, Inc., Boston, Massachusetts

10:00 A.M. **Obstruction and Infection of the Lower Urinary Tract**

EDWARD B. D. NEUHAUSER, M.D., Radiologist-in-Chief, Children's Medical Center and Professor of Radiology, Harvard Medical School, Boston, Massachusetts

Dr. Hamlin

Dr. Neuhauser

11:00 A.M. **Modern Treatment of Pituitary Disorders**

HANNIBAL HAMLIN, M.D., Providence, Rhode Island and Boston, Massachusetts — Clinical Associate in Neurosurgery, Massachusetts General Hospital, Assistant in Neurosurgery, Harvard Medical School.

12:00 NOON to 2:00 P.M. Luncheon

Scientific Program

2:00 P.M. to 4:00 P.M.

Presiding—JAMES E. POULIN, M.D.

Sponsored by the Maine Medico-Legal Society

Problems in the Diagnosis of Drowning

IRVING I. GOODOF, M.D., President, Maine Medico-Legal Society, Waterville

Dr. Branch

Medico-Legal Sociological Problems in Maine

CHARLES F. BRANCH, M.D., Pathologist, Central Maine General Hospital, Lewiston

6:30 P.M. Clam Bake

Presentation of Golf Prizes by
DANIEL R. SHIELDS, M.D., Lewiston, Chairman
Golf Tournament

Specialty Group Meetings

Monday, June 24

2:00 P.M. to 4:00 P.M.

Maine Society of Obstetrics and Gynecology and Maine Society of Clinical Hypnosis

WILLIAM M. SHUBERT, M.D., Bangor and DONALD COULTON, M.D., Bangor, presiding

Psychosomatic Aspects of Gynecology

WILLIAM S. KROGER, M.D., Beverly Hills, California

Dr. Dohlman

M.M.A. Eye Section

PAUL MAIER, M.D., Portland, presiding

Recent Advances in Medical and Surgical Treatment of Corneal Diseases

CLAES H. DOHLMAN, M.D., Massachusetts Eye and Ear Infirmary, Boston, Massachusetts

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Maine Society of Internal Medicine

Business Meeting

WILLIAM C. BURRAGE, M.D., Portland, presiding

Tuesday, June 25

10:00 A.M. Maine Medico-Legal Society

Business Meeting

IRVING I. GOODOF, M.D., President, presiding

12:30 P.M. Luncheon Meeting

Maine Chapter of the American Academy of Pediatrics and Maine Radiological Society

JOHN F. GIBBONS, M.D., Portland, presiding

Speaker:

EDWARD B. D. NEUHAUSER, M.D., Boston, Massachusetts

2:00 P.M. to 4:00 P.M.

Maine Society of Anesthesiologists

GEORGE E. SULLIVAN, M.D., Fairfield, presiding

New Anesthetic Agents

ANGELO G. ROCCO, M.D., Anesthesiologist, Exeter Hospital, Exeter, New Hampshire

Dr. Rocco

Dr. Stocklen

Maine Thoracic Society

LOUIS N. FISHMAN, M.D., Lewiston, presiding

New Concepts of the Epidemiology of Tuberculosis as Related to Tuberculosis Eradication

JOSEPH B. STOCKLEN, M.D., Controller of Tuberculosis, Cuyahoga County, Cleveland, Ohio

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Luncheon Meetings

Sunday, June 23

M.M.A. Recruitment Officers

Tuesday, June 25

See Specialty Group Program

SPECIAL NOTICES

Election of President-Elect

The election of a President-Elect will take place at the General Assembly, June 24 at 4:00 P.M.

Election of Councilors

Election of Councilors for the following Districts will take place at the Second Meeting of the House of Delegates on Sunday, June 23 at 3:00 P.M.

First District — Cumberland and York

Second District — Androscoggin, Franklin and Oxford

In accordance with the By-Laws, "Nominations for members of the Council for any District where there is a vacancy shall be made by a caucus of the members of the House of Delegates in that District. Each candidate for Councilor must be a resident of the district for which he is nominated."

Council Meetings

The Council will meet on Saturday, June 22 at 3:30 P.M. and daily throughout the session at a time and place to be announced.

Golf Tournament

DANIEL R. SHIELDS, M.D., Chairman

HONORARY PINS

Presentation of the Association's Honorary Pins will be made by Ralph C. Stuart, M.D., President of the M.M.A., at the Annual Banquet, Monday evening, June 24 at 6:30 P.M.

FIFTY-YEAR PINS

Fifty-Year Lapel Pins will be presented to the following members who were graduated from Medical School in 1913:

Androscoggin County

Ralph A. Goodwin, Sr., M.D., Auburn
Harvard Medical School

Cumberland County

Jacob Melnick, M.D., Portland
College of Physicians and Surgeons, Boston

Albert W. Moulton, Sr., M.D., Portland
Bowdoin Medical School

Kennebec

Ralph L. Reynolds, M.D., Waterville
Harvard Medical School

Penobscot

Harry D. McNeil, M.D., Bangor
Bowdoin Medical School

York

H. Danforth Ross, M.D., Sanford
Bowdoin Medical School

FIFTY-FIVE-YEAR PINS

Fifty-Five-Year Pins will be presented to the following members who received Fifty-Year Pins in 1958:

Androscoggin County

Edson B. Buker, M.D., Auburn

Kennebec

Roland L. McKay, M.D., Augusta

Penobscot

Allan Craig, M.D., Scarsdale, New York

Somerset

Henry E. Marston, M.D., North Anson

SIXTY-YEAR PINS

Sixty-Year Pins will be presented to the following members who received their Fifty-Year Pins in 1953:

Kennebec

Charles E. G. Shannon, M.D., Waterville

Lincoln-Sagadahoc

Warren E. Kershner, M.D., Bath

Oxford

Henry Pearson, M.D., Brownfield

SIXTY-FIVE-YEAR PIN

A Sixty-Five-Year Pin will be presented to the following member who received his Fifty-Year Pin in 1948:

Knox

Walter D. Hall, M.D., Rockland

Visiting Delegates

Canadian Medical Association, Quebec Division
PAUL-EMILE COTE, M.D., Montreal, P. Q.

The Connecticut State Medical Society
CHARLES M. BARBOUR, M.D., West Hartford
SYDNEY LURIA, M.D., Bridgeport

The Massachusetts Medical Society
DONALD A. NICKERSON, M.D., Salem

Medical Society of the State of New York
SAMUEL Z. FREEDMAN, M.D., New York

The New Brunswick Medical Society
ELI R. DAVIS, M.D., Saint John, N. B.

The New Hampshire Medical Society
PHILIP M. L. FORSBERG, M.D., Concord

The Rhode Island Medical Society
HANNIBAL HAMLIN, M.D., Providence

Vermont State Medical Society
W. HERBERT JOHNSTON, M.D., Montpelier

Delegates to Out-of-State Meetings

Canadian Medical Association, Quebec Division
RALPH C. STUART, M.D., Guilford

The Connecticut State Medical Society
ROBERT M. KNOWLES, M.D., Portland

The Massachusetts Medical Society
HARLAND G. TURNER, M.D., Norridgewock

Medical Society of the State of New York
ASA C. ADAMS, M.D., Orono

The New Brunswick Medical Society
LINUS J. STITHAM, M.D., Dover-Foxcroft

The Rhode Island Medical Society
LEONARD G. MIRAGLIUOLO, M.D., Bangor

Vermont State Medical Society
DANIEL R. SHIELDS, M.D., Lewiston

Program for the Ladies

You are invited to attend the Maine Medical Association Scientific Sessions and we know that you will want to hear Mr. Hatch on Sunday evening, June 23, and Governor Reed, who is to be the guest speaker at the Annual Banquet on Monday, June 24.

And — who can resist the Clam Bake? This final event of the annual session takes place on Tuesday evening, June 25.

We know, too, from experience that many of you prefer to visit the many antique shops in the area, or just take it easy. The pool, the golf course, the tennis courts are ideal spots for just such a program.

County Delegates

FIRST DISTRICT

Cumberland County Medical Society

Delegates: Albert Aranson, M.D., 39 Deering St., Portland, Secretary
(2 years)
Merle S. Bacastow, M.D., 22 Bramhall St., Portland
Louis G. Bove, M.D., 12 Deering St., Portland
Philip S. Fogg, Jr., M.D., 173 Pleasant Ave., Portland
Howard P. Sawyer, Jr., M.D., 22 Bramhall St., Portland
Philip P. Thompson, Jr., M.D., 131 Chadwick St., Portland
Maurice Van Lonkhuyzen, M.D., 31 Bramhall St., Portland
(1 year)
Charles R. Glassmire, M.D., 58 Deering St., Portland
David K. Lovely, M.D., 46 Deering St., Portland
Robert H. Pawle, M.D., 8 Walcott Ave., Falmouth
Robinson L. Bidwell, M.D., 31 Bramhall St., Portland

Alternates
(2 years)
Clifford W. Gates, M.D., 130 Main St., Gorham
Clement A. Hiebert, M.D., 18 Bramhall St., Portland
Stephen E. Monaghan, M.D., 157 Pine St., Portland
Hugh P. Robinson, M.D., 27 Deering St., Portland
Stanley B. Sylvester, M.D., 1377 Washington Ave., Portland
William J. Tetreau, M.D., 144 Spring St., Portland
(1 year)
George O. Chase, M.D., 144 State St., Portland
John F. Gibbons, M.D., 22 Bramhall St., Portland
Donald P. Cole, M.D., 45 Deering St., Portland
Ronald A. Bettle, M.D., 32 Federal St., Brunswick

York County Medical Society

Delegates: Charles W. Kinghorn, M.D., 4 Wentworth St., Kittery, Secretary
Robert F. Ficker, M.D., Maine St., Kennebunkport
Roger J. P. Robert, M.D., 331 Main St., Saco
Carl E. Richards, M.D., 34 Winter St., Sanford

Alternates
Melvin Bacon, M.D., 122 Main St., Sanford
Stephen A. Cobb, M.D., 34 Winter St., Sanford
Kenneth E. Leigh, M.D., Brixham Rd., York

SECOND DISTRICT

Androscoggin County Medical Association

Delegates: Donald L. Anderson, M.D., 369 Main St., Lewiston, Secretary
Waldo A. Clapp, M.D., 215 College St., Lewiston (1 yr.)
Harvey J. Proulx, M.D., 92 Pine St., Lewiston (1 yr.)
Louis N. Fishman, M.D., 185 Webster St., Lewiston (2 yrs.)
George B. O'Connell, M.D., 11 Lisbon St., Lewiston (3 yrs.)

Alternates
Wilfrid A. Cloutier, M.D., 210 Sabattus St., Lewiston (1 yr.)
Edward L. Reeves, M.D., 179 Sabattus St., Lewiston (1 yr.)
Charles A. Hannigan, M.D., 85 Goff St., Auburn (2 yrs.)
Frederick B. Lidstone, M.D., 117 Goff St., Auburn (3 yrs.)

Franklin County Medical Society

Delegates: Philip B. Chase, M.D., 36 Main St., Farmington, Secretary
Paul E. Floyd, M.D., 2 Middle St., Farmington

Alternate
Wallace H. Duffy, M.D., 100 Main St., Farmington

Oxford County Medical Society

Delegates: Albert P. Royal, Jr., M.D., 82 Maine Ave., Rumford, Secretary
Joelle C. Hiebert, Jr., M.D., Box 148, Norway (1 yr.)
H. Richard Bean, M.D., 241 Main St., Norway (2 yrs.)

Alternates
Dexter E. Elsemore, M.D., 11 Main St., Dixfield (1 yr.)
James A. MacDougall, M.D., 303 Penobscot St., Rumford (2 yrs.)

THIRD DISTRICT

Knox County Medical Society

Delegates: Henry O. White, M.D., 22 White St., Rockland, Secretary
Harry G. Tounge, Jr., M.D., 12 Union St., Camden
Albert L. Hunter, M.D., Knox County General Hospital, Rockland

Alternate
Johan Brouwer, M.D., 5 Beech St., Rockland

Lincoln-Sagadahoc County Medical Society

Delegates: George W. Bostwick, M.D., Newcastle, Secretary
Ralph C. Powell, M.D., Damariscotta
John F. Andrews, M.D., 20 West St., Boothbay Harbor

Alternates
Mary J. Tracy, M.D., Bristol Rd., Damariscotta
Miriam C. Doble, M.D., 990 Washington St., Bath

FOURTH DISTRICT

Kennebec County Medical Association

Delegates: Earle M. Davis, M.D., 2 School St., Waterville, Secretary
Anthony E. Lepore, M.D., 72 Church St., Gardiner
Francis J. O'Connor, M.D., 4 Woodlawn St., Augusta
Paul H. Pfeiffer, M.D., 14 Gilman St., Waterville
Richard H. Dennis, M.D., 33 College Ave., Waterville
Loring W. Pratt, M.D., 177 Main St., Waterville

Alternates
John D. Denison, M.D., 105 Brunswick Ave., Gardiner
Lane Giddings, M.D., 6 E. Chestnut St., Augusta
Napoleon J. Gingras, M.D., 6 E. Chestnut St., Augusta
Kenneth W. Sewall, M.D., 2 School St., Waterville
Samson Fisher, M.D., 173 Main St., Waterville

Somerset County Medical Society

Delegates: Harland G. Turner, M.D., Box 38, Norridgewock, Secretary
Paul R. Briggs, M.D., Hartland

Alternate
Howard L. Reed, M.D., 68 Water St., Skowhegan

Waldo County Medical Society

Delegates: Seth H. Read, M.D., 15 Church St., Belfast, Secretary
Norman E. Cobb, M.D., 132 Main St., Belfast

Alternate
George L. Temple, M.D., Fahey St., Belfast

FIFTH DISTRICT

Hancock County Medical Society

Delegates: Russell G. Williamson, M.D., Blue Hill Memorial Hospital, Blue Hill, Secretary
Elizabeth E. Williamson, M.D., Blue Hill
Llewellyn W. Cooper, M.D., 194 Main St., Bar Harbor

Alternates
Arthur M. Joost, Jr., M.D., P.O. Box B, Bucksport
Philip L. Gray, M.D., Blue Hill

Washington County Medical Society

Delegates: Karl V. Larson, M.D., East Machias, Secretary
James C. Bates, M.D., Eastport

Alternate
Hazen C. Mitchell, M.D., Calais

SIXTH DISTRICT

Aroostook County Medical Society

Delegates: Clyde I. Swett, M.D., 18 Sherman St., Island Falls, Secretary
Frederick J. Gregory, M.D., So. Main St., Caribou
Raymond G. Giberson, M.D., 156A Academy St., Presque Isle
Arthur K. Carton, M.D., Market Square, Houlton

Alternates
Samuel Rideout, M.D., 72 Faire Harbour, New London, Connecticut
Thomas V. Brennan, M.D., 106 Hardy St., Presque Isle
H. Douglas Collins, M.D., Caribou Clinic, Caribou

Penobscot County Medical Association

Delegates: Frederick C. Emery, M.D., 242 Cedar St., Bangor, Secretary
Carl E. Blaisdell, M.D., 47 Broadway, Bangor
Nelson P. Blackburn, M.D., 489 State St., Bangor
Irvin E. Hamlin, Main St., E. Millinocket
Lloyd Brown, M.D., 316 State St., Bangor
Martyn A. Vickers, M.D., 268 State St., Bangor

Alternates
Wilfred I. Butterfield, 119 Main St., Lincoln
Leonard G. Miragliuolo, M.D., 10 Maple St., Bangor
William M. Shubert, M.D., 317 State St., Bangor
Philip B. Thomas, M.D., 205 French St., Bangor
Paul W. Burke, M.D., 5 High St., Newport

Piscataquis County Medical Society

Delegates: Isaac Nelson, M.D., Box 336, Greenville, Secretary
Linus J. Stitham, M.D., 50 Main St., Dover-Foxcroft

Alternate
Charles H. Lightbody, M.D., No. Main St., Guilford

Special Exhibits

Ampac and Mempac

Associated Hospital Service of Maine

Beacon Investing Corporation, Rutland, Vermont

Division of Cancer Control of the State of Maine Department of Health and Welfare

Maine Cancer Society

Maine Chapter, American Academy of General Practice

Maine Medical Center — Department of Obstetrics & Gynecology

Maine Heart Asociation

Maine Medical Center — Departments of Radiology & Orthopedics

Maine Radiological Society

Maine Society of Anesthesiologists

Maine Society of Clinical Hypnosis

Maine Trauma Committee

The Medical Foundation, Inc.

Portland Child Guidance Clinic

Technical Exhibits

Abbott Laboratories, North Chicago, Illinois
Representatives: Mr. A. J. Mack, Mr. A. Tancredi, Mr. W. A. Towne

The Alkalol Company, Taunton, Massachusetts
Representative: Mr. E. W. LeClair

Ayerst Laboratories, 245 Paterson Ave., Little Falls, New Jersey
Representatives: Mr. Edward McMahon, Mr. Stanley Hewson

Elmer N. Blackwell, Surgical Appliance Specialist, 565 Congress St., Room 207, Portland, Maine
Representatives: Mr. Elmer N. Blackwell, Mr. Oakley R. Sanborn

The Borden Company, 350 Madison Ave., New York 17, New York
Representatives: Mr. Richard Marr, Mr. Joseph R. Galvin

Brewer & Company, Inc., 67 Union St., Worcester 8, Massachusetts
Representatives: Mr. Sidney L. Segel, Mr. Walter Spaulding

Buffington's Inc., Worcester 8, Massachusetts
Representative: Mr. Charles W. Rich

Burroughs Wellcome & Co. (U.S.A.) Inc., 1 Scarsdale Rd., Tuckahoe, New York
Representatives: Mr. W. C. Murley, Mr. R. Parke, Jr.

Carnation Company, 5045 Wilshire Blvd., Los Angeles 36, California
Representatives: Mr. Daniel P. Worthington, Mr. William L. Galatas, Mr. Russell B. Mundi

Ciba Pharmaceutical Company, Summit, New Jersey
Representatives: Mr. John H. Angis, Mr. John F. Sullivan

The Coca-Cola Company, P. O. Drawer 1734, Atlanta 1, Georgia

De Puy-Hissick Associates, P. O. Box 65, Cheshire, Connecticut
Representatives: Mr. John L. Hissick, Mr. E. R. Goldman, Mr. W. R. Johansen

Endo Laboratories Inc., 84-40 101st St., Richmond Hill 18, New York
Representatives: Mr. David Green, Mr. George Williams

The Dietene Company, Highway 100 at West 23rd St., Minneapolis 16, Minnesota
Representative: Mr. Louis Colombo

Geo. C. Frye Company, 116 Free St., Portland, Maine
Representatives: Mr. Milton S. Kimball, Mr. John F. Kimball, Mr. Hubert A. Honan, Mr. Sidney F. Cheney, Mr. Robert S. Cheney, Mr. Irving F. Beers, Mr. Millard C. Webber, Mr. Arthur R. Wickham

Geigy Pharmaceuticals, P. O. Box 430, Yonkers, New York
Representatives: Mr. D. D. Vacca, Mr. T. Cowan, Mr. H. Kern

Holland-Rantos Company, Inc., 393 Seventh Ave., New York 1, New York
Representative: Mr. Milton Hart

Lederle Laboratories, Pearl River, New York
Representatives: Mr. R. Maffei; Mr. J. Boucher, Mr. G. Pooler, Mr. J. Crosby

Maine Surgical Supply Co., 233 Vaughan St., Portland, Maine
Representatives: Mr. Philip Dana, Jr., Mr. George H. Munroe, Mr. Louis Olore, Mr. Robert Axelsen, Mr. Lawrence Gardiner

The S. E. Massengill Company, Inc., 717 Fifth Ave., New York 22, New York
Representatives: Mr. Ralph F. Blais, Mr. T. W. Coffey

McNeil Laboratories, Inc., Camp Hill Rd., Fort Washington, Pennsylvania
Representatives: Mr. Thomas J. Lynch, Mr. Joseph A. Ruest, Jr.

Mead Johnson Laboratories, Evansville 21, Indiana
Representatives: Mr. Kendall Dow, Mr. George McLay

The Wm. S. Merrell Company, Cincinnati 15, Ohio
Representatives: Mr. Joseph F. Crozier, Mr. James R. MacIsaac

The National Drug Company, 4663 Stenton Ave., Philadelphia 44, Pennsylvania
Representative: Mr. William P. Dunbar

Organon, Inc., West Orange, New Jersey
Representative: Mr. Clarence Friery

Parke, Davis & Company, Detroit 32, Michigan
Representatives: Mr. Merrill Dole, Mr. Lee Bosworth

Pfizer Laboratories, 235 East 42nd St., New York 17, New York
Representatives: Mr. Bradley Garcelon, Mr. Wallace Houston, Mr. Leonard Robinson, Mr. Peter Davis

Riker Laboratories, Inc., Northridge, California
Representatives: Mr. L. H. Celentano, Mr. J. J. Cella

Roche Laboratories, Nutley 10, New Jersey
Representatives: Mr. Lewis N. Wayne, Mr. Burton V. Caldwell

J. B. Roerig and Company, 235 East 42nd St., New York 17, New York
Representative: Mr. Clarence J. Johnson

William H. Rorer, Inc., 500 Virginia Dr., Fort Washington, Pennsylvania
Representatives: Mr. Jefferson Beward, Mr. Edward T. Croke, Mr. Raymond A. Gelinas

Ross Laboratories, Box 1317, Columbus 16, Ohio
Representatives: Mr. Harold Hutchinson, Mr. Dick Kaufman

Sandoz Pharmaceuticals, Hanover, New Jersey
Representative: Mr. Herman Emidy

G. D. Searle & Company, P. O. Box 5110, Chicago 80, Illinois
Representatives: Mr. James H. Muncaster, Mr. John J. Pash, Mr. Alfred L. Grimes

Smith, Miller & Patch, Inc., 902 Broadway, New York 10, New York
Representatives: Mr. Paul Woodward, Mr. Kenneth Mullen

E. R. Squibb & Sons, 745 Fifth Ave., New York 22, New York
Representatives: Mr. W. T. Gray, Mr. J. L. Jameson

Stiefel Laboratories, Inc., Oak Hill, New York
Representative: Mr. James C. Francis

Stimpson Copy Products, Inc., 652 Congress St., Portland, Maine
Representatives: Mr. William R. Russo, Jr., Mr. Warren J. Reddy, Mr. Joseph Morris, Mr. Ivan E. Traver

Surgeons' and Physicians' Supply Co., 961 Commonwealth Ave., Boston 15, Massachusetts
Representatives: Mr. Lester E. Clough, Mr. John R. Stutz

Syntex Laboratories, 701 Welch Rd., Palo Alto, California

U. S. Vitamin & Pharmaceutical Corporation, 800 Second Ave., New York 17, New York
Representatives: Mr. William G. Moran, Mr. John R. Winfield

Warner-Chilcott Laboratories, Morris Plains, New Jersey
Representatives: Mr. William H. Comyns, Mr. Joseph Verrengia

The Warren-Teed Products Company, 582 West Goodale St., Columbus 15, Ohio
Representatives: Mr. Roger L. Couture, Mr. Paul G. Hayes

Zimmer-Walker Associates, 16 Gray St., Portland, Maine
Representatives: Mr. B. P. Babcock, Mr. L. Wendell Walker

Notice of a Change

The former policy of distributing the Roster of the Maine Medical Association and its Auxiliary to all Journal recipients with this issue of the Journal has been discontinued.

The complete Roster will be made up at the end of each year.

Maine Heart Association Notes

Bronchoconstriction In The Presence Of Pulmonary Embolism

Impressive pathologic evidence . . . suggests that recurrent showers of small pulmonary emboli are commonly undetected clinically. The eventual development of obstructive pulmonary hypertension . . . in some cases is well known. . . . It has been reported, however, that prompt treatment can result in reversal of pulmonary hypertension. Unfortunately, the early detection of pulmonary emboli is difficult. . . .

. . . Our observations suggest that the measurement of bronchoconstriction might be a useful aid to the early detection of pulmonary emboli.

. . . Although the causes of bronchoconstriction are many . . . wheezing may be too readily dismissed as "intrinsic asthma" when it in fact represents recurrent episodes of pulmonary embolism.

. . . Whatever the mechanism may finally prove to be, the demonstration of bronchoconstriction in selected patients appears to represent an objective and sensitive, although non-specific, index of pulmonary embolism.

(Gurewich, Victor, et al: Circulation, Vol. XXVII:339-345, 1963)

"Modern Concepts Of Cardiovascular Disease"

A monthly publication of the American Heart Association "Modern Concepts of Cardiovascular Disease" is available, free of charge, to Maine physicians by writing the Maine Heart Association, 116 State Street, Augusta, Maine. The publication contains material by scientists, research specialists and physicians on all areas of the cardiovascular field.

Provision For Medical Care To Dependents Of Members Of The Military Forces Of NATO Countries

1. On and after 1 July 1963 the accompanying dependents of active duty military personnel, who are members of the land, sea and air forces of North Atlantic Treaty Organization countries stationed or passing through this country, will be entitled to the same care under the Medicare Program as those dependents of members of the uniformed services.

2. The standard Identification Form DD Form 1173 will be furnished to those dependents and all contractual provisions and criteria as to scope of care and eligibility will be the same as for dependents of members of our uniformed services.

3. In the coding of Appendix A, the branch of service code and grade of the NATO member will bear the same number as our corresponding branch of service code and grade. For purposes of identification of dependents of NATO members, programming, and budget actions by this office, place an "X" or "11" overpunch in column 17.

4. When NATO claims (DA Forms 1863) are transmitted to this office along with the routine submission of the voucher, claims, and cards should be segregated and earmarked.

5. This provision becomes effective 1 July 1963 and will be implemented by formal contract modification.

6. Contractors are requested to announce this change in the Dependents' Medical Care Program through their periodic publications.

County Society Notes

HANCOCK

April 10, 1963

A meeting of the Hancock County Medical Society was held on April 10, 1963 at the Hancock House in Ellsworth, Maine.

Ralph C. Stuart, M.D., President of the Maine Medical Association, was presented to the society.

The guest speaker was Dean H. Fisher, M.D., whose subject was "The Practice of Medicine in Maine in the next Ten Years." Dr. Fisher said many changes are certain to occur because:

1. Many counties in Maine have an old population, very low per capita income; all counties have a low percentage of students going into higher education and all counties have a high percentage of high school drop-outs and illegitimacy.
2. Therefore, fewer professional people are going to be available at a rising cost to an increasingly poorer population.
3. To meet these needs:
   a. Increased government financing of medical care is inevitable.
   b. Physicians should urge wider private insurance coverage for health protection.
   c. A more active rehabilitation program is inevitable.
   d. Community hospitals must be replaced by Regional Medical Centers and out-lying feeder clinics. He cited the Maine Coast Memorial Hospital in Ellsworth, as a perfect example of the ideal regional health setup.
4. Regional Centers will provide
   a. A full staff of qualified specialists and ancillary personnel.
   b. General practitioners in the out-lying clinics will refer patients to the Regional Center for "total evaluation" and lifetime care planning.

RUSSELL G. WILLIAMSON, M.D.
Secretary

KENNEBEC

April 18, 1963

At the meeting on April 18th, the proposed budget for 1964 of the Maine Medical Association as presented at the Interim Meeting of the House of Delegates was approved. The proposed amendments to the Constitution and By-Laws of the Maine Medical Association as proposed by the Piscataquis County Medical Association were also approved.

A resolution on the death of Jacob M. Jackler, M.D. was submitted by George J. Robertson, M.D., Vaughn R. Sturtevant, M.D. and Samson Fisher, M.D. It was resolved that a copy of this tribute be entered into the minutes of the Kennebec County Medical Association and that copies be sent to his wife and mother.

The clinical portion of this program, which was held at the Veterans Administration Center in Togus, was presented by Chester W. Howe, M.D., Associate Professor of Surgery at Boston University and a Visiting Surgeon at the Massachusetts Memorial Hospital. Dr. Howe spoke on current concepts of post operative infections.

May 16, 1963

A regular meeting of the Kennebec County Medical Association was held at the Augusta Country Club in Augusta, Maine on May 16, 1963. The meeting was called to order by George J. Robertson, M.D. of Waterville, Vice-President of the Association.

Dr. Robertson is leaving Kennebec County in the fall, and Kenneth W. Sewall, M.D. of Waterville was elected unanimously to take Dr. Robertson's place on the Council of the county society.

George E. Sullivan, M.D. of Fairfield, Councilor for the Fourth District of the Maine Medical Association, traced the history and present standing of pending legislation in Augusta. He stated that as of today legislative document no. 1352 is deadlocked in committee but may be brought out at the end of the legislative period to be rushed through the House. He also noted that legislative document no. 479 was passed by the House but defeated by the Senate by a very narrow margin.

Dr. Robertson appointed a committee to investigate the chiropractic activity here in Maine, to review any statutes which may be pertinent, and to review the training and requirements of chiropractics here in the state. Joseph R. Crawford, M.D. is chairman, Robert L. Ohler, M.D. and Allan J. Stinchfield, M.D. are members of the committee.

A motion by Richard H. Dennis, M.D. of Waterville that the Kennebec County Medical Association delegates present a resolution to the Maine Medical Association House of Delegates recommending that the Association provide a lobbyist to be active in Augusta was seconded and passed unanimously. Dr. Dennis and M. Tieche Shelton, M.D. of Augusta are to draw up the resolution and present it to the M.M.A. House of Delegates for action.

EARLE M. DAVIS, M.D.
Secretary

WASHINGTON

May 7, 1963

A regular meeting of the Washington County Medical Society in conjunction with the St. Croix Medical Society was held on May 7, 1963 at the Charlotte County Hospital in St. Stephens, New Brunswick.

Murray M. Davis, M.D., of the faculty of Dalhousie Medical College in Halifax, Nova Scotia, spoke on "Rupture of the Uterus During Pregnancy."

At a short meeting of the Washington County Medical Society the following officers were elected for 1963:

President, James C. Bates, M.D., Eastport
Vice-President, Robert G. MacBride, M.D., Lubec
Secretary-Treasurer, Karl V. Larson, M.D., East Machias
Board of Censors, Harold G. Sears, M.D., Woodland (3 yrs)

This was followed by a meeting of the St. Croix Medical Society and dinner, which was served at the St. Croix Hotel in Calais, Maine to twenty-three members and guests.

Short talks were given by Ralph C. Stuart, M.D., President of the Maine Medical Association and Frederick L. Whitehead, Executive-Secretary of the New Brunswick Medical Society.

KARL V. LARSON, M.D.
Secretary

New Members

ANDROSCOGGIN

James A. Willie, M.D., 111 Webster St., Lewiston

KENNEBEC

Alexander A. Boytar, M.D., Box 724, State Hospital, Augusta

KNOX

Peter H. Holz, M.D., 51 Elm St., Camden

In Memoriam

Androscoggin County	
Max Hirshler, M.D.	Lewiston
Frank P. Methot, M.D.	Lewiston
Aroostook County	
James B. Morrison, M.D.	Ashland
Cumberland County	
Harry E. Davis, M.D.	Portland
Albert D. Foster, M.D.	Rochester, New York
John R. Hamel, M.D.	Portland
Henry W. Hanson, Jr., M.D.	Cumberland Center
Henry P. Johnson, M.D.	Portland
DeForest Weeks, M.D.	Cumberland Foreside
Hancock County	
George Parcher, M.D.	Ellsworth
Kennebec County	
Jacob M. Jackler, M.D.	Waterville
Maurice A. Priest, M.D.	Deland, Florida
Oxford County	
John A. Greene, M.D.	Rumford
Washington County	
Samuel R. Webber, M.D.	Calais
York County	
Owen B. Head, M.D.	Sanford

News, Notes and Announcements

Alan M. Bridges Appointed Executive Director Health Facilities Planning Council

Alan M. Bridges, South Portland, has been appointed as the executive director of a newly planned statewide Health Facilities Planning Council it was recently announced by Philip K. Reiman, president of the Maine Hospital Association.

Reiman explained that the new statewide Health Facilities Planning Council is being established through funds made available by the United States' Public Health Service. The Maine Hospital Association sought and subsequently received a two year seed grant of $38,000. According to Reiman, Maine is one of the few states to receive such a grant for a statewide planning council.

The Council, which will be composed of leaders from various Maine communities, will act as an advisory body on matters pertaining to the expansion of existing health facilities and services and the construction of new facilities.

It is anticipated that this Council will be an effective body to encourage a broader range of health care facilities in certain areas and, at the same time, to discourage an oversupply of specific facilities—such as short-term hospital beds—in other localities.

"This Council," Reiman said, "when officially organized should assure Maine citizens that the dollars available for health care are channeled in the most economical manner possible to guarantee maximum health care at minimal cost.

"Moreover, the establishment of the Council is concrete evidence of the desire possessed by the providers of care to furnish and to maintain high quality medical care in a method which does not unnecessarily drain the communities' economic resources."

In announcing the appointment of the executive director, Reiman noted that Bridges, who is currently Director of Public & Professional Relations with the Associated Hospital Service of Maine, is well equipped for the new position through his familiarity with the problems of financing community health care.

Bridges, a graduate of the University of Maine, has been associated with Blue Cross and Blue Shield for nearly 5 years. A native of Penobscot, Maine, he has been active in community affairs since moving to the Portland area in 1958.

He will assume his new duties July 1 and at that time, with his wife and 5 children will take up residency in the Augusta area.

Health Examination Survey

The Public Health Service's Health Examination Survey, authorized by the Congress in 1956, having completed its first cycle of examinations of adults, will visit Portland, Maine to examine a sample of the child population (ages 6 through 11) during a four-week period beginning July 23.

The examinations will inaugurate a nationwide sampling of children's examinations.

The children to be examined in the Portland area will be chosen by a scientific sampling process from the entire 6-through-11-year population. The selection is irrespective of social, economic or health characteristics. Only about 200 children will be selected in the sample in this area.

Examinations will be given in the Health Survey's mobile examination center, which will be brought to the area and set up in a convenient location.

The purpose of the examinations is to collect on a uniform basis statistical information on various aspects of children's health and to obtain data on certain physical and physiological measurements of these children, relating to growth and development.

The examination process will include a clinical examination by a pediatrician; a dental examination by a dentist; a vision test; an audiometric test performed in a soundproof room; an X-ray of the wrist for bone age; an X-ray of the chest for cardiovascular and pulmonary abnormalities; a 12-lead electrocardiogram; a phonocardiogram to obtain taped recordings of heart sounds; a test of vital capacity and expiratory flow rate, using a spirometer; an exercise tolerance test under a measured workload, using a bicycle ergometer, with recordings of blood pressure, pulse rate and respiration; a grip strength test; recordings of height, weight, skinfold thickness and various other anthropometric measurements; and a series of psychological tests administered by a psychologist.

The health examination is not intended as a screening procedure; referral for diagnosis is not made. The fact that the examination is not complete and is not a substitute for a visit to one's own physician and dentist is stressed with the parents of each child examined. A report of findings will be sent only to the child's physician and dentist.

The examining physicians will be fellows or senior residents in pediatrics working temporarily with the Public Health Service. Other members of the team will include nurses, a dentist, a psychologist, and X-ray and other technicians regularly on the PHS staff.

Book Review

Correlative Neuroanatomy and Functional Neurology — By Joseph G. Chusid, M.D. and Joseph J. McDonald, M.D. Eleventh Edition. Published by Lange Medical Publications, Los Altos, California, 1962. Pp. 384. Price $5.50.

This valuable handbook, Correlative Neuroanatomy and Functional Neurology, is well known to any of us who have been in neurological fields for a number of years. It is hard to add any criticism to the excellent short preface given by the authors.

This handbook is not only for beginners and for those studying for various specialty board examinations and so on, but I feel a very valuable adjunct for all neurologists and neurosurgeons both at the attending level and the resident level when making their rounds and for quick reference for various very pertinent facts in relation to the many complicated neuroanatomical and neurophysiological correlations in their relation to each individual patient as one sees them on the wards. I feel that this book certainly should be in the working library of every neurological and neurosurgical ward and the extensive coverage of the various ancillary diagnostic facilities used in neurology today are certainly a valuable addition to the text. By this I mean rapid evaluation of some of the basic pathological phenomena, discussion of the various methods, results and techniques in electroencephalography and electromyography, neuroradiology and so on. Another very valuable asset of this reference compendium are the excellent illustrations of basic pathological processes and the many diagrammatic correlations between anatomy and clinical abnormalities. Also the charts and diagrams should be extremely useful in quick reference in establishing facts related to dermatomal origin of reflexes, sensory dermatomes, useful drugs in various fields of therapy such as Parkinsonism and epilepsy and so on. There are certainly many important guideposts which immediately refresh the teacher's and the student's knowledge of certain facts in relation to various pathological conditions, from which they can go on and expand these facts by going into the more extensive neurological literature, both textbooks and journals.

The authors are to be congratulated on continually revising and improving this compendium which will always be of value as a quick reference guide.

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Rupture Of The Posterior Papillary Muscle Following Myocardial Infarction*

Peter F. Lansing, M.D. and Jacob B. Dana, M.D.

Introduction

Rupture of a papillary muscle of the heart is an infrequent complication of myocardial infarction. In the two patients reported below, the diagnosis was made ante mortem.

Case Reports

Case No. 1: This 61-year-old white male entered the Togus Veterans Administration Center on March 2, 1961, because of chest pain. Three days prior to admission he developed anterior chest discomfort with associated aching in both shoulders and elbows. An electrocardiogram revealed an acute posterior myocardial infarction. Three days later he was transferred to Togus. Early in the morning of that day, there occurred another episode of moderately severe anterior chest pain of several minutes duration.

Physical examination revealed a slightly dyspneic, elderly, white male who had a few crackling rales at the left lung base, hepatomegaly, blood pressure of 130/80 mm./Hg., and an enlarged heart. At the apex was a Grade III, high-pitched, blowing pansystolic murmur, which transmitted for a short distance toward the sternum and left axilla. P_2 was slightly accentuated.

The white blood count was 14,500 with 80% neutrophiles. Urinalysis revealed 25-30 WBCs per high-powered field. Hematocrit was 38 vol. %, and the hemoglobin was 11.6 Gm. BUNs varied from 35 to 36 mg. %. Postprandial blood sugars ranged from 283 to 166 mg. %. Serum lactic dehydrogenase was 1400 units on the day of admission.

The chest x-ray showed generalized cardiac enlargement and early signs of congestive failure.

Two electrocardiograms were compatible with recent posterior myocardial infarction.

The patient was placed on a low-sodium, diabetic diet, intermittent doses of Meralluride®, Lente® insulin with additional fractional doses of regular insulin, Dicumarol® and heparin anticoagulant therapy. As there continued to be signs of left-sided heart failure, he was digitalized. There was no change in the quality of the pansystolic apical murmur. Many episodes of anterior chest distress occurred. On the day prior to death, a pericardial friction rub appeared. The following day, the patient suddenly developed pulmonary edema and died.

An autopsy performed one-half an hour after death revealed pulmonary edema. The heart weighed 480 Gm. The coronary arteries were calcified. There was occlusion by thrombi of the posterior descending branch of the left coronary artery. The posterior papillary muscle of the left ventricle was ruptured and both segments of the muscles revealed necrosis and hemorrhage. Serial sections of the myocardium showed recent infarction of the posterior wall of the left ventricle. There was also a healed anterior wall infarct of the left ventricle.

Case No. 2: This 56-year-old white male was admitted to the Togus Veterans Administration Center on September 26, 1954, for further treatment of a recent posterolateral myocardial infarction. On August 30, 1954, the patient had a 24-hour-long episode of substernal distress associated with clamminess and sweating. No heart murmur was present. Because auricular fibrillation developed on September 3, the patient was digitalized. Sinus rhythm recurred. On September 7, a musical precordial systolic murmur was first noted. Subsequently, the patient had many episodes of nocturnal dyspnea, two episodes of chest pain, and a 24-hour-period of numbness and coldness of the right side of the body. Rusty colored sputum was produced for several days prior to admission to Togus.

Physical examination revealed an elderly, white male who had dyspnea, orthopnea, and cyanosis. Blood pressure was 90/80 mm./Hg. Pulse was 120. There was marked neck vein distention, a positive hepatajugular reflux, expiratory wheezes throughout both lungs, inspiratory crackling rales in the left axillary region, and increased right-sided deep tendon reflexes. The heart was enlarged. The second pulmonic sound was accentuated. There was a loud, blowing, musical, apical systolic murmur which transmitted toward the left axilla. A diastolic gallop was heard.

*From the Veterans Administration Center, Togus, Maine

TABLE I

Type	*Murmur*	*Thrill*	*Pseudo-Rub*	*Clinical Findings*
Rupture, papillary muscle	Apical, holosystolic, rough, transmits to axilla, 50%+	Not present	Occasional	Left ventricular failure, sudden deterioration the rule
Ruptured interventricular septum	Systolic, maximal left sternal border, 95%+	75% present	Not heard	Right ventricular failure
Acute cardiac dilatation	Systolic, intensity increases over a period of days	Not present	Not heard	Gradual onset of symptoms

The white blood count was 13,500 with 86% neutrophiles and 14% lymphocytes. Sedimentation rate was 63 mm./hr. BUN rose from 57 mg. % to 75 mg. %. The Quick prothrombin time increased from 16 to 47 seconds.

Chest x-ray revealed pulmonary edema.

Two electrocardiograms demonstrated acute posterior myocardial infarction.

The patient was treated with a low-sodium, low-calorie diet, and was anticoagulated with Dicumarol and heparin. He received supplemental doses of digitalis.

The patient's course was rapidly downhill with persistent dyspnea, orthopnea, cyanosis, and shock. He died two days after admission.

At autopsy, the lungs revealed infarction of the right lower lobe and left lower lobe. The heart weighed 760 Gm. There was hypertrophy of the left ventricle. In the region of the apex, there was an ante mortem thrombus. Almost the entire left ventricle was infarcted. The posterior papillary muscle of the left ventricle had ruptured at its insertion. Grossly and microscopically, myocardial infarction had extended to involve the papillary muscle.

Discussion

Rupture of a papillary muscle is due to acute myocardial infarction in the majority of cases. It has also been reported as a complication of syphilis, bacterial endocarditis, trauma, and periarteritis nodosa.[1] The prognosis is extremely poor and over 50% of the patients die within twenty four hours, less than 20% survive the second week, and only occasional cases survive longer periods.[1,2,3]

Rupture of the posterior papillary muscle appears more frequently than rupture of the anterior muscle. This has been explained on the basis of an increased susceptability to ischemia due to remoteness from the main coronary source and blood supply from only small vessels.[2]

A presumptive diagnosis after myocardial infarction can be made from the characteristic course and physical findings. Within the two weeks following infarction there is sudden deterioration of the patient's status, heralded frequently by recurrence of chest discomfort. Dyspnea and acute, often intractable, pulmonary edema are common. In about 60% of the reported cases there appears a loud apical systolic murmur which is characteristically holosystolic and rough. There may be sudden intensification of a previous murmur. The murmur is an almost constant finding in those who survive the immediate acute event.[1] Satisfactory auscultation may not be possible because of rapid demise or obscuration by respiratory noise. An apical diastolic murmur may also be heard. A pseudo rub attributed to motion of twisted and tangled chordae tendinae[4] may occur but is of limited diagnostic value since post-myocardial infarction pericarditis cannot be excluded. A palpable systolic thrill does not occur. There is usually a significant fall in blood pressure. The electrocardiogram remains unchanged or shows extension of the previous infarction.[3] Conduction defects and arrhythmias are not common.

Cooley et al[5] reported two cases of repair of a ruptured papillary muscle of the right ventricle, one the result of trauma and one secondary to endocarditis complicating ventricular septal defect. They discussed the technical difficulties of such a repair following myocardial infarction and estimated the optimal time of repair as at least six weeks and preferably three months after onset of infarction when sufficient fibrous change had occurred.

The salvage rate will continue to be low because of the frequency of intractable left ventricular failure.

Differential Diagnosis

The differential diagnosis is summarized in Table One.

Perforation of the infarcted interventricular septum is most likely to cause confusion. Here the murmur is maximal in the fourth and fifth intercostal spaces near the left sternal border. A systolic thrill is felt in over 50% of the cases. Right ventricular failure is the common sequel as contrasted with left ventricular failure which occurs in papillary muscle rupture. Survival is also short. Eighty-one and one-half percent of the patients die within eight weeks and only 7% live a year or more. A few patients have lived from two years to more than six and a half years.[6] The electrocardiograms may show various arrhythmias such as ventricular block of all degrees, right and left bundle branch block and AV nodal rhythm because of involvement of the septum.

Left ventricular dilatation and cardiac failure secondary to a less acute process lack the dramatic onset of

either of the two conditions. The increase in heart size and intensification of the murmur are more gradual and response to therapy is more satisfactory.

Rupture of the chordae tendinae of the mitral valve results in similar findings as rupture of the papillary muscle but this is secondary to bacterial endocarditis, rheumatic valvulitis, and trauma and is not a consideration in myocardial infarction.[7]

Ruptute of the papillary muscle remains an infrequent but dreaded complication of myocardial infarction. Early diagnosis and vigorous therapy of cardiac decompensation are the only footholds of possible survival as they open the avenue for possible surgical repair at a later date.

Summary

Two cases of posterior myocardial infarction complicated by rupture of the posterior papillary muscle of the left ventricle are described.

This complication can be diagnosed ante mortem by a characteristic course and physical findings.

The differential diagnosis and possibility of surgical correction at a later date are discussed.

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Rectus Sheath Syndrome*

George G. Broad, M.D.

The practice of medicine and surgery receives a fillip, a renewed zest, when we come across a syndrome which is either a new one which we might be fortunate enough to discover for ourselves, or is perhaps a symptom complex recognized but personally observed so seldom as to make it a once-or-twice-in-a-lifetime occasion. The latter category is illustrated, it seems to the writer, by the following case history:

Case Report

CSH, a male aged 69 years, was admitted to the Veterans Administration Center, Togus, Maine, at 1:15 a.m. February 10, 1963. The patient had awakened the previous morning with a severe, sickening pain in the left lower quadrant of his abdomen, with associated nausea. He stated that it hurt so much to try to vomit that he did not do so. He noted a mass in his left lower abdominal quadrant. He took a laxative and had some loose bowel movements without passing blood. It should be noted that he had had some left lower abdominal quadrant discomfort for the previous three or four days. In addition, he had been suffering with a respiratory infection and had a rather severe cough. He was admitted to this hospital for the first time in 1957 for surgical treatment of bilateral inguinal hernias. He had hypertension, first found at that time, and auricular fibrillation. He was again in this hospital in 1958 with generalized arteriosclerosis, moderately severe, and auricular fibrillation and cardiac hypertrophy. A mild cerebral accident had produced weakness of the right side of the body which proved to be transitory only. He was re-admitted in 1961 because of chest pain. X-Ray study revealed right and left cardiac enlargement. His blood pressure ranged from 160/-100 to 178/100. Anticoagulant therapy was used but it had been discontinued on August 3, 1961. The patient improved under medical therapy. The patient continued his medications at home (no anticoagulants) and stated that he had been well until the present illness.

Physical Examination: The patient was first seen sitting on the side of his bed. He was alert, conscious, did not appear acutely ill. He smiled during the history taking. Examination of the heart revealed the left border of dullness to be in the left nipple line. Rate and rhythm were irregular. There was a soft systolic murmur at the apex in the aortic area. Blood pressure was 200/110. A number of minor variations from normal were present in various parts of the body but none related to the present illness. The abdomen was rounded in contour. There was a very firm, tender mass present overlying the normal position of the left rectus muscle. This mass was very firm and quite tender, extended from the umbilicus to the symphysis pubis. It was approximately 8 cm. in width and nearly that deep into the abdominal wall. The medial margin of this mass was sharply delineated over its entire length. The remaining abdominal wall muscles were completely relaxed and there was no other abdominal tenderness. The liver, spleen, and kidneys were not palpable. The rectal examination revealed no rectal masses or tenderness.

Laboratory Data: Urine examination and blood serology

*From The Veterans Administration Center, Togus, Maine

were normal. The hemoglobin was 10.8 Gm.; WBC, 8200, with 69% neutrophiles.

X-Ray Findings: An x-ray of the chest showed the heart to be tremendously enlarged. Some magnification however could have been due to the difference in projection and distance of this film compared to the previous film. There was widening and calcification of the aorta. The pulmonary vessels were not prominent and there was no congestive failure evident on the chest film. It was the conclusion of the roentgenologist that there was cardiomegaly and arteriosclerosis of the aorta. The film of the abdomen showed slight enlargement of the liver. The intestinal gas pattern was not remarkable with gas down to the rectum although there were a few small air pockets in the small bowel. Incidentally noted was extensive calcification of the abdominal aorta and iliac arteries.

It was felt that this patient had either a rupture of the deep epigastric blood vessels within the rectus sheath or a rupture of the rectus abdominis muscle itself. To the credit of the referring physician is the fact that he suspected this condition. The patient was given a small dose of Meperidine® and the blood pressure was taken every three hours during the night. He was given an intravenous solution of dextrose in water. An abdominal flat plate x-ray study was requested for 8:00 a.m. The patient had a comfortable night. His blood pressure dropped to 160/96. His pulse remained between 72 and 80. The physical signs improved as time went by. The patient was comfortable and moved around in bed. Continuous hot packs were applied to the area of the abdominal wall mass starting about eight hours after admission to the hospital. On the day following admission the patient was put on a bland diet. The tenderness and swelling of the left rectus sheath improved steadily and fairly rapidly. The size of the mass had decreased perceptibly within twenty four hours following admission.

On the fourth day, the patient's bowels moved; the mass was much reduced in size. Ecchymosis was then present in the region of the hemorrhage. The patient's condition seemed stable as to his general physiology. He was allowed to go home on the fourth day following admission.

Discussion

The condition which this patient presented is unusual, and occurs relatively infrequently. Only one standard textbook of surgery presented a full discussion of this condition and several others that the author of this article consulted made no mention of it whatsoever. In Christopher's Surgery, 7th edition[1], a good discussion of this condition is found. It is worth noting that Schafer[2] was reported to have collected 101 cases of the rectus sheath syndrome, 9 of which resulted in death. Seven of these fatalities were directly attributable to hemorrhage. This fact indicates that we must not treat this condition lightly. Surgery does not seem to be necessary unless hemorrhage continues. Observation in the hospital for a day or two should enable the proper treatment to be carried out. A recent article in *British Medical Journal*[3] discussed two cases of this interesting syndrome. The first patient had torn the ends of the rectus abdominis muscle; 425 cc. of blood were removed from the rectus sheath. The muscle was repaired. The second patient had no evidence of torn muscle but there was a blood clot in the rectus sheath. The authors of the article under discussion believed surgical exploration was advisable. Their patients recovered. It seems probable that they might have recovered without surgery.

Summary

The infrequent condition of hemorrhage into the rectus sheath or the rupture of the rectus abdominis muscle is satisfactorily treated by conservative measures in many instances. Careful hospital observation is desirable in order to be sure of cessation of bleeding. A case report is presented.

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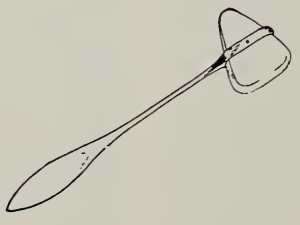

A Psychosocial Personality Model And Its Application To A Psychiatric Treatment Program

By Charles Rothstein, Ph.D.

The aim of this paper will be to describe a psychosocial model of personality and report on the results of its application to a psychiatric treatment program. The personality model is best described as a hedonistic, teleological, holistic, and dynamic model. While it is hoped that this model has general application to all levels of human behavior, it will be discussed at present in the context of a psychiatric treatment setting inasmuch as empirical results are available for this setting.

The setting in which this model was actualized is that of a continued treatment ward in a neuropsychiatric hospital. The ward in question is a 92-bed open ward on the continued treatment service of a 560-bed psychiatric hospital in a Veterans Administration Center. Patients come to this ward either from the acute intensive treatment service or from other wards on the continued treatment service. While patients on this ward are considered to be capable of handling an open ward environment they were considered to be incapable of adjusting to extrahospital environments as evidenced by their failure to tolerate trial visits or discharge or by their resistances to leaving the hospital. The average age of patients on this ward was 55.4 years and the average length of hospitalization was 7.2 years. To use an old definition, the majority of the patients on this ward typify the hospital-adjusted chronic patients who presently occupy a large proportion of the beds in psychiatric hospitals.

The Personality Model

The program to be described emanates largely from the following assumptions which, for the purposes of brevity, will be discussed as a series of related postulates.

Postulate I

Man's existence as a unique social being in time provides him with certain basic needs. Vicissitudes of these needs provide the psychological stimuli for man's affective reactions. These needs, while operationally interrelated, are separated here for discussion purposes into four major need systems.

A. Safety needs. Here we refer to man's needs relative to maintaining the physical integrity of his organism. Anxiety or anxiety-equivalents are responses occasioned by any perceived threat to the physical integrity of the organism. Depression or depressive-equivalents are responses occasioned by any perceived failure to have maintained the physical integrity of the organism.

B. The need for effectance goals. Here we refer to man's need to meet his existence as a unique being in time through engaging in goal-directed activities that will lead to his perception that he is becoming progressively effective in—having a progressive effect upon—his personal, social, and/or natural worlds. Effectiveness in the personal world is exemplified by man's actualization of his intellectual, mechanical, artistic and/or physical potentials; in the social world by man's shaping or influencing other individuals or groups; in the natural world by man's shaping or influencing the world of nature. By progressive effectiveness we refer to man's need to follow a perceived success experience with new effectance goals of a higher order.

Depression or depressive-equivalents are responses occasioned by the absence of effectance goals or by any perceived failure to realize an effectance goal. Anxiety or anxiety-equivalents are responses occasioned by any perceived threat to successful realization of pursued effectance goals.

C. The need for esteem. Here we refer to man's need to be held in esteem; i.e., to be respected, admired and approved of by significant others of his environment. Anxiety or anxiety-equivalents are responses occasioned by any perceived threat to obtaining or maintaining the esteem of significant others. Depression or depressive-equivalents are responses occasioned by any perceived failure to have obtained or maintained the esteem of significant others.

D. The need for supportive relationships. Here we refer to man's need to be related to others for active and/or moral support in his attempts to meet his safety, effectance and esteem needs. Anxiety or anxiety-equivalents are responses occasioned by any perceived threat to obtaining or maintaining a key supportive relationship. Depression or depressive-equivalents are responses occasioned by any perceived failure to have obtained or maintained a key supportive relationship.

These needs and the affective reactions to vicissitudes of these needs are assumed to be given by the human condition. Although different cultures define the appropriate methods for meeting needs, the needs and affective reactions per se, are assumed to be culturally transcendent.

*From the Neuropsychiatric Hospital Veterans Administration Center, Togus, Maine

Postulate II

As an outgrowth of life experiences each individual structures a life style; i.e., an idiosyncratic set of beliefs, expectancies, and responses whose intent is to avoid painful affects. Notwithstanding the uniqueness of life styles, an adequate life style would be represented by the configuration of an individual, within the context of supportive relationships, engaging in goal-directed activities that lead to a progressive sense of effectiveness that is validated and valued by his significant others and compatible with his physical integrity. An inadequate life style would be represented by any significant deviation from this configuration; the greater the deviation, the higher the probability that painful affects will be experienced.

Postulate III

The structuring of an adequate life style depends upon man's learning to: recognize human needs and the affective consequences of vicissitudes of these needs; recognize the realities that provide the framework for need gratification—i.e., the realities of his personal, social and natural worlds; recognize his responsibility for taking personal action to meet each need in the context of the other needs. Learning deficits in these areas underlie man's failure to structure an adequate life style. The greater the learning deficits, the more inadequate the life style and the higher the incidence of painful affects, pathological defenses aimed at reducing painful affects or physiological breakdowns attributable to continued stress.

Postulate IV

Painful affects experienced as a consequence of the failure of a life style to meet human needs will lead to one or combinations of the following responses:

A. The painful affects may motivate the individual to correct his learning deficits and structure a more adequate life style.

B. The painful affects may motivate the individual to attempt to meet his needs through psychological defense mechanisms; e.g., neurotic or schizophrenic defense patterns.

C. The painful affects may motivate the individual to seek individuals or institutions who will be given the responsibility for meeting his needs; e.g., passive-dependent or passive-aggressive orientations.

D. The painful affects may motivate the individual to strike out at his environment in an attempt to force it to meet his needs; e.g., antisocial behavior.

E. The painful affects may motivate the individual to seek chemical reducers for anxiety; e.g., alcohol, drugs.

F. The painful affects may persist and eventually lead to physiological breakdowns; e.g., psychotic disorganization, psychosomatic reactions.

Treatment Program

In order to construct a treatment program for psychiatric patients consistent with the previous assumptions we had to face three major problems.

1. What type of hospital environment will be most conducive to the correction of learning deficits?
2. How can patients be motivated to approach the corrective learning experiences?
3. What should be the nature of disposition planning subsequent to the treatment program?

The following sections will describe our approaches to these problems.

Treatment Planning Staff

All patients on this ward were seen at a meeting of the treatment planning staff attended by the ward team of nurse, social worker, psychiatrist and psychologist. Regardless of the patient's history or current symptoms he was faced, in effect, with the following alternatives:

1. You are free to choose whether you wish to leave the hospital or remain here. If you choose to leave, you will be discharged at the time of your request. If you choose to stay, you will be required to adhere to the ward treatment program and plan for your eventual discharge. If you choose to stay but refuse to adhere to the treatment program, you will be required to leave the hospital.
2. Adherence to the ward treatment program will entail your accepting an assignment in one of the physical medicine and rehabilitation service hospital industries where you will be required to engage in productive work; taking care of your personal hygiene which includes buying your own clothing; obtaining your own haircuts; being responsible for your own showers and your general personal appearance; taking care of the cleanliness of your living area, as we have no aides on this ward and each patient is held responsible for the cleanliness of the ward; obeying the ward rules for social living.
3. When you have accepted these obligations, you will be allowed eventually to choose your own hospital industries assignment; to have a permanent pass that entitles you to leave the station for any time that you are not on your work assignment; to draw from your own funds to make whatever purchases you desire; and to choose your extra-hospital placement.

The rationale for offering patients these choices stems from the belief that the initial motivation for participating in a treatment program will derive from patients choosing to move toward the promised rewards of progressive privileges and freedom and/or away from the threat of immediate loss of their symbiotic relationship with the hospital, a relationship that is seen as one of their major defenses against painful affects. While it is hoped that the promise of positive rewards will help the patient choose to approach the corrective learning experiences, the hospital staff is

aware of the fact that many patients will approach corrective learning experiences only through the circuitous route of choosing to avoid the anxiety that will attend their failure to make this approach. In essence, it is felt that the hospital must not only make available an environment in which corrective learning experiences can take place, but must also assume the responsibility for motivating patients to choose to approach these corrective learning experiences.

While the patients' reactions to this treatment planning session vary, some of the more common responses will be reviewed.

First, there is a group of patients who, when confronted with the choice, fall back on recitations of their symptoms, which may range from somatic to delusional complaints. However, regardless of the nature of their complaints, they are told they will have to choose between the alternatives offered. Rather than react to symptoms as most people have reacted in the past, the staff members repeat the offer of the alternatives—discharge or adherence to the treatment program. If the patient chooses to leave the hospital, he receives his discharge at once. If he says he will accept the ward treatment program, he is assigned to a detail and returned to the ward, where his behavior in fulfilling his obligations is carefully evaluated by the ward team. If, however, the patient overtly or covertly appears to be negating the treatment program after having said he wanted to accept it, he is told that he will have to leave the hospital as his choice is only between staying and participating in the treatment program or refusing to participate and leaving.

Patients who receive "quick" discharges from the hospital because they choose to leave or refuse to take part in the treatment program—which is interpreted to them as the equivalent of choosing to leave—are told that if they choose to return to the hospital at a later date, they will be returned to this ward and again offered the same alternatives. The majority of the patients who receive "quick" discharges, either as a consequence of actively choosing discharge at the initial treatment planning meeting or refusing to take part in the treatment program, return to the hospital rather quickly, as they soon find that their inadequate life styles expose them to a good deal of anxiety outside the hospital. Patients who return to the hospital after this "quick" discharge are seen at another treatment planning staff meeting and offered the same choices as before. This pattern is continued until the patient chooses to accept the ward treatment program or until he remains outside the hospital because he can establish an extrahospital relationship or other-hospital relationship.

Patients who choose the ward treatment program, some after the initial treatment planning staff meeting, others only after an experience of one or more "quick" discharges, are carefully followed in the treatment program, so that the granting of privileges closely parallels their assumption of personal and social responsibilities. Whenever such privileges are given, there is an attempt to point out the relationship between the privileges and the patients' fulfillment of the hospital-imposed obligations. In addition to granting patients what material rewards can be offered, there are attempts to reinforce responsible behavior through verbal approval. Such verbal approval may come from individual ward team members or from the team as a whole in the periodic staff conferences which are held for each participant in the treatment program.

The first aim with this group of patients is to get them to engage in goal-directed activities that will lead to a socially valid sense of effectiveness. The second aim is to get them to begin to assume the responsibility for initiating such behavior patterns. While it is recognized that the staff has to seduce and/or force patients into choosing to try these behavior patterns, it is hoped that the rewards derived from them will help patients learn to assume responsibility themselves for initiating such behavior.

The ward team, both individually and collectively, has often been likened to the stern but fair parent, who knows what the child should learn if he is to function in life and is determined that it will be learned. The staff feels that any means appropriate to the end of helping an individual correct learning deficits so that he can structure a more adequate life style is a desirable means.

Patients are continued in the treatment program until such time as the ward team agrees that the patient has reached "Maximum Hospital Benefit." By maximum hospital benefit, it is meant that the patient has progressed as far as he is likely to progress in a hospital setting.

Because a hospital environment can only crudely approximate the optimal conditions for effective learning, and because these patients have a long path to tread in the development of an adequate life style, the hospital keeps patients in the treatment program only until they appear to have reached a plateau in personal growth; that is, until they have apparently reached an asymptote in their acceptance of the responsibilities for meeting their human needs. When this plateau is reached, it is felt that the patient has realized maximum hospital benefit and that the hospital has operated to the limits of its capabilities.

The next goal is to help these patients move toward extrahospital environments which will enable further growth toward a more adequate life style.

Disposition Planning Staff

Patients presented at the disposition planning staff meetings are told that they have reached maximum hospital benefit and must now choose from among the following alternatives:

1. You may set up independent housekeeping in the community or return to your primary family unit with as much or as little social and vocational help from the hospital as you choose to accept.

2. You may contact some interested relative and make a living arrangement with him.
3. If you wish and funds are available, you may go to a foster or nursing home.
4. You may make application to a domiciliary.

The rationale for offering patients the primary responsibility for choosing their extrahospital environments stems from the belief that a personally chosen environment will be reacted to more postively than will environments chosen by others. In this hospital's experience, patients seem to have many methods of negating environments which are thrust upon them; whereas they apparently react more favorably to environments they have had a hand in choosing—though they may have been forced into the position of having to make a choice. In essence, it is felt that an essential factor in facilitating the continuation of the patient's personal growth will be his own commitment to one of the available extrahospital environments.

Patients are also told that if they fail to adjust to their initial placement choice, they can return to the hospital and choose another placement. It is pointed out that this pattern of allowing them to choose placements will continue either until they manage to adjust to one of their choices or fail to adjust to all of their choices. In the latter case, they are told the hospital will then, and then only, assume the responsibility for choosing a placement.

After a patient has made a choice, the hospital will be ready to offer as much or as little help as the patient requests. The patient is then placed on trial visit to the placement of his choice, and if his adjustment is satisfactory after a six-month to one-year trial period, he receives a maximum hospital benefit discharge. If, on the other hand, he is not making a satisfactory adjustment and returns to the hospital, he is seen at another disposition planning staff session and again offered a choice of placements. As mentioned previously, this pattern will be continued until the patient manages to adjust to one of his choices or until he fails to adjust to all of his choices. In the latter case, the hospital assumes the responsibility of choosing a placement for the patient.

Results

In the three years before the start of this program, there was an average of 20 discharges a year from this 92-bed ward. Since this program has been in operation discharges have averaged 80 a year from this same ward. To illustrate the discharge pattern, the year 1959, in which year 73 patients received maximum hospital benefit discharges, has been selected. During 1959 the ward's average daily patient load was 78, which gives a monthly discharge rate of 7.8%. This figure compares very favorably with the pre-program discharge rate of 1.8%.* (The 1959 figure does not include patients who received "quick" discharges after an initial meeting with the treatment planning staff; it includes only maximum hospital benefit discharges which were given after successful trial visits to placements resulting from discussion at a disposition planning staff meeting.)

Of the 73 patients who received maximum hospital benefit discharges in 1959—many of whom were early resisters to the program and had had one or more "quick" discharges—55 were able to adjust to placements of their own choice. Twenty-six of these 55 were discharged after successfully adjusting to independent living or to living with their primary family units; 19 were discharged after successful trial visit adjustment with relatives other than their primary family units; 10, after successful adjustment to foster home settings. The remaining 18 patients were unable to adjust to one of their own placement choices but were able to adjust to hospital-chosen placements. Fifteen of them are in foster homes or nursing homes, while three live with relatives chosen by the hospital.

Before the start of this program about 60% of the patients on the treatment ward were receiving some tranquilizing medication while in the hospital. As of this date, only 20% of the patients receive tranquilizing medication, typically in small maintenance dosages. Similarly, before the start of this program, 90% of the patients discharged from this ward were receiving tranquilizing medication. In 1959, only 40% of the patients discharged from this ward were on such medication. The need for tranquilizing medication is empirically established through drug withdrawal while the patient is still in the hospital.

The patients on this ward are a diagnostically heterogeneous group and, while there is no differentiation among diagnostic groups in administering the program, a diagnostic breakdown of the 73 patients discharged from the ward in 1959 follows: 28, schizophrenic reaction, paranoid type; 21, chronic brain syndrome; 15, schizophrenic reaction, undifferentiated type; 4, inadequate personality; 3, alcoholic; 2, schizophrenic reaction, hebephrenic type.

Because discharge rates without the antithesis, return rates, can lead to a distorted picture, the patients discharged in 1959 were followed up. Two years from June 1959, there were only eight returns from the whole group of 73. This gives a yearly return rate of 5.5%, which compares favorably with the pre-program yearly return rate of 18% for the ward.

The next goal with this group will be to conduct a more extensive follow-up to see if the growth processes initiated in the hospital have progressed, leveled off or been reversed in the extrahospital environments.

In addition to the successful discharges in 1959, there also were some notable failures. Failures were grouped as follows:

1. Patients who refused to accept the treatment program in spite of numerous "quick" discharges from the hospital. Patients in this group would either become

*The average daily patient load for this ward before 1959 had been 92.

acutely psychotic or in other ways disturbing to the community when placed outside the hospital, and would be returned by community officials although still resistive to participating in the treatment program. Because of repeated inability to motivate these patients to approach the corrective learning experiences and because of concern with their disturbing behavior in the community, the hospital had to admit defeat with them and allow them to stay in the hospital on their own terms. The usual procedure was to transfer these patients to another ward.

2. Patients who negated the treatment program by appealing to outside sources, such as relatives or public officials who pressured the hospital administration to keep them in the hospital even after those applying pressure were apprised of the rationale behind the treatment program. Because of reluctance to jeopardize the entire treatment program for these few cases, they were transferred to other wards in the hospital.

3. Patients who participated in the treatment program but were unable to adjust to either their own or hospital-chosen placements. Once again, the procedure with this group was to transfer them to other hospital wards.

4. Patients who participated in the treatment program but could not leave the hospital because they could not support themselves, had no relatives willing to accept them, had no money to pay for foster home placement, and could not get accepted in a domiciliary. The policy with this group was to retain them on the ward until some environmental change—for example, change in pension status, availability of accepting relatives or admission to a domiciliary—made it possible to find extrahospital placements for them. The majority of these patients were discharged in either 1960 or 1961.

Discussion

The results cited here are, of course, open to various interpretations. Presented for consideration are the writer's assumptions as to the factors which played the major role in the increased discharge rate.

1. The perception of chronic psychiatric patients as individuals with grossly inadequate life styles who, regardless of their previous history of psychotic episodes or other pathological responses to anxiety, are now attempting to meet their needs primarily through the maintenance of a parasitic or symbiotic relationship with the hospital.
2. The structuring of a treatment program that provides both the milieu for corrective learning experiences and the motivation for approaching the corrective learning experiences.
3. Giving to patients who have accepted the treatment program the opportunity to choose their extrahospital placements from among a range of extrahospital environments that parallel the relative adequacy of their postprogram life styles.
4. Allowing patients to continue to choose placements in spite of failures to adjust to initial placement choices, with the hospital choosing placements for them only when they have successively failed all of their own placement choices.
5. Having available a foster home program and pension funds for patients who require such extrahospital disposition.
6. Frequent contact with the extrahospital community to apprise residents of the treatment philosophy and goals.
7. The Chief of Staff's active support of the program, particularly in the realm of taking those calculated risks that a program of this sort entails.
8. A solid front of agreement by the ward team as to the treatment policy and goals so that patients cannot negate the program by the frequently used maneuver of playing one staff member against another.

Summary

This paper describes a treatment program for chronic psychiatric patients and the assumptions which underlie the program. Results, as measured by discharge and return rates, are reported, and the factors presumed to have played the major role in producing the results are offered for consideration.

State Of Maine

Department of Health and Welfare

DEAN H. FISHER, M.D.
COMMISSIONER

Case Reporting In Venereal Disease Control

A Physician Responsibility

ALTA ASHLEY, M.D., M.P.H.*

At present we in Maine, as well as in other parts of the country, are faced with one of the most baffling problems in modern medicine. Despite the fact that adequate means of control are known, there has been a steady rise in the incidence of venereal disease over the past few years. Not only has the incidence increased, the age of persons involved has gradually reduced so that it is no longer uncommon to find individuals in their early teens who are infected.

Gonorrhea has been and still is the disease most commonly diagnosed and treated. However, infectious syphilis is being encountered increasingly more frequently and among young adults who are most active in their relationships (divorcees, bar flies, homosexual males et al). These people, however, are a potential source of infection to the whole community.

In the past year a nationwide survey was conducted by the American Social Health Association with cosponsorship of the American Medical Association, to determine the magnitude of the venereal disease problem, with particular emphasis upon syphilis.[1] A simple questionnaire was sent to just under 200,000 physicians and osteopaths known to be in private practice in this country. They were questioned as to the number of cases of gonorrhea, infectious syphilis and other stages of syphilis which they had treated from April 1 to June 30, 1962. From the data obtained an estimation of the total number of cases treated for one year by all physicians was made. According to Arthur C. Curtis, M.D.,[1] Chairman, Venereal Disease Committee, American Social Health Association, this survey revealed a reservoir of unreported infectious syphilis as well as other venereal diseases throughout the country.

Figures for the nation as a whole and for Maine in particular were as follows:

	National		*Maine*	
No. physicians responding	131,245	71.7%	678	62.9%
No. treating inf. syph.	7,082		30	
Cases treated	13,930		55	
Cases reported	1,576	11.3	3	5.5
No. treating gonorrhea	37,535		187	
Cases treated	156,515		456	
Cases reported	16,907	10.8	41	9.0

It is hardly necessary to point out the poor showing of the nation as a whole and Maine inparticular in the degree of cooperation of private practitioners with official agencies in the control of venereal disease, particularly early syphilis, as revealed by percentage of cases reported. By their failure to report, physicians take upon themselves the whole responsibility of untreated disease and its consequences to the community and even their own families and friends.

Non-reporting of disease interferes with a control program in two ways: (1) by failing to show the actual size of the problem and (2) by failure to break the chain of infection. Few physicians in private practice have the time or have they been trained in interrogating cases for contacts, nor have they the means to see that known contacts are brought to treatment. Physicians entering practice since the end of World War II have seen few cases of infectious syphilis and thus can be led astray by the "Great Imitator" unless they are aware of the disease and constantly on the alert for its appearance. William J. Brown, M.D.[2] has put it well in a recent issue of Medical Tribune:

"Syphilis must be recognized first as a possibility in patients, whatever their social or economic background, age, sex, or outward appearance. It must be included in differential diagnosis. This is good medicine.

"Secondly, whenever an infectious case comes to attention, morbidity must be reported, and the chain of infection traced with all possible speed. This not only is good medicine; it is good citizenship.

*District Health Officer, Augusta

"Admittedly, the tracing of chains of syphilis infection is tedious and time consuming and requires considerable skill. But skillful epidemiologic assistance is available through public health auspices to almost every private physician in almost every area of the country; and there is really no longer an excuse for not making full use of it."

In 1960 a survey was conducted in the Central Maine Health District III which revealed approximately the same results as the 1962 National survey.[3] It is distressing to realize that despite increased efforts at obtaining, reporting and contact information, the percentage of cases reported has not increased nor has there been a check on the incidence of venereal disease in the State.

According to information on file in the Division of Venereal Disease Control cases reported in the past three years were:

	Total	*Gonorrhea*	*Primary & Sec. Syphilis*	*under 15*
1960	132	124	8	—
1961	171	164	7	2 all female gon.
1962	231	221	10	4 all female gon.

Because of this and because of the dire consequences of untreated syphilis, renewed effort toward control is being made. We have effective means of treatment when used correctly, improved laboratory aids in diagnosis, and a corps of public health nurses trained in the techniques of contact interview. The present gap in our control program is the number of cases not brought to light through failure of the physician to report and obtain or allow to be obtained information of contacts—either sources of infection or those potentially infected by the case being treated.

The present plan for improving venereal disease control in this state has been developed according to the steps listed below:

1. All laboratories performing diagnostic tests are requested to report positive findings to the State Laboratory and to submit specimens for confirmation.

2. All postive tests done at the State Laboratory are reported to the District Health Officer in whose territory the physician practices.

3. On receipt of a positive laboratory report a letter is sent to the physician from the District Health Office asking for (A) a report of the case, if the diagnosis is substantiated by clinical findings (including history of exposure) or (B) his disposal of a case not requiring a report. The letter to physicians and new report forms may be obtained from the author.

4. The Diagnostic Laboratory has modified its procedure for syphilis testing as follows:[4]

The Diagnostic Laboratory utilizes the VDRL qualitative slide test as a screening procedure for all specimens. This is a sensitive test, and will detect virtually all reactive serums. Any specimen showing even a "weakly reactive" result is examined with the VDRL quantitative test and the Kolmer complement fixation test. The Hinton test is no longer being performed. Results of the tests are reported to the physician. If non-reactive findings are at variance with the physician's evaluation of the patient, further testing should be requested. Reactive findings that do not appear to be compatible with the physician's evaluation of a particular patient indicate the need of further testing. The confirmatory procedures available are the Kolmer Reiter protein, the fluorescent treponemal antibody and the treponema pallidum immobilization tests. The latter test is the definitive test in syphilis serology at the present time but it is not available in the state; specimens must be sent to the Communicable Disease Center in Atlanta, Ga., through our Diagnostic Laboratory, and require two weeks for a report to be received.

Gonorrhea diagnosed on a clinical basis with confirmation by a stained smear slide is reasonably adequate in acute cases. In older cases or in the chronic form of the disease, smears are inadequate. Negative reports are commonplace in these cases. Culturing the exudate will demonstrate often the presence of gonococci. Because of the extreme lability of the gonococcus, specimens must be planted almost directly to culture media which means the patient must be seen at the hospital laboratory.

5. The venereal disease report form has been changed in an effort to simplify reporting for the physician and to furnish information to the Department of Health and Welfare which can aid in bringing contacts under medical supervision. It should be noted here that such statements as "acquired in other state" "a pickup in (Boston, New York, Miami)" does not absolve the Department of Health and Welfare from reporting to the other community such contacts. Every effort should be made to identify the contact—by name, place of encounter, place of exposure, peculiar characteristics (tattoo marks, birthmarks, approximate age, hair color, etc.) so that the person can be interviewed and examined and given treatment. Investigation of contacts named by out-of-state cases is frequently requested of Bureau of Health personnel by other state health departments.

The letter and new report forms have been used in District III and have been found to aid greatly in reporting and following of cases. Cooperation of physicians has been excellent so far. These methods are now being extended to include all areas of the state.

Nothing has been done by these changes in procedure to destroy the doctor patient relationship not to violate confidentiality. On the contrary, if information needed is furnished by the physician, his patient need not be interviewed by a third party, and those who investigate contacts need never know the source of information. Some physicians feel that an official disease report is not needed if a postive laboratory report has been made by the State Laboratory. A laboratory report does not constitute a report of the disease. Only when laboratory findings are substantiated by clinical information can a diagnosis be made. A report must bear the signature of

a physician or head of an institution (hospital, jail, etc.). Conversely, as stated above, a negative laboratory report does not preclude presence of disease where history and physical findings point definitely to diagnosis.

When, however, the patient refuses to reveal the possible sources of his disease or the names of those he may have infected prior to treatment, he is considered as acting *not* in the interest of the public health and according to the Rules and Regulations of the Bureau of Health, reporting of his disease must include his name and usual place of abode, in order that an interview by Bureau of Health personnel may be carried out.

It is sincerely hoped that such changes will aid both the physician and the Division of Venereal Disease Control in checking the spread of these diseases.

Human nature being what it is there is very little expectation that control can be obtained by a change in the mores, although a good counselling program among teen-age clinic patients in New York did aid in bringing about a more healthful attitude among these young people toward sex and marital relationships.[5] Because of a lack of personnel, treatment clinics where effort can be concentrated, and the high percentage of teen-agers and young adults who are neither in school nor adequately employed, our venereal disease problem is potentially a big one, once infection is introduced widely throughout the state.

Not until an effective immunizing agent can be found for the two major diseases, syphilis and gonorrhea, will there be complete control of these diseases. But since we now have a treatment agent which is effective, inexpensive, and easy to administer it behooves all of us involved in the control of these diseases to see that all infected or potentially infected persons are brought to treatment early and given sufficient therapy to cure their infections.

According to Fiumara,[6] there has not been encountered in this area a gonococcal strain which is resistant to treatment by penicillin if blood levels are raised to and held at 0.35 for 24 hours. Such levels can be maintained by the use of 600,000 units of procaine penicillin-G in aqueous solution injected intramuscularly. Other forms of injectable penicillin may be used but the dosage recommended is 1,200,000 to 1,800,000 units in divided doses at one sitting. Use of oral penicillin even as additional medication is not to be condoned because (1) insufficient blood levels are obtained at too slow a rate and (2) there is no guarantee that the pencillin will be taken by the person for whom it has been prescribed. The habit of passing a few pills around among friends may be a large factor is masking infection, especially in the female, and producing "negative" smears without completely clearing the infection. Early syphilis, if present, will have been inadequately treated and later stages may then not be recognized and a new case of untreated syphilis and its tragic consequences will not have been prevented.

Since venereal disease is treated almost exclusively by private practitioners here in Maine, it is the burden of the practitioner to see that every case or potentially infected person receives prompt and adequate treatment. To quote Dr. Brown[7] again: "Speaking to the medical profession very frankly as well as practically, I believe the effort is worth your while. In helping to eradicate syphilis, you as a private practitioner—individually and professionally—have everything to gain and nothing to lose."

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ERNEST W. STEIN, M.D.

President, Maine Medical Association

1963-1964

Ernest W. Stein, M.D.

Ernest W. Stein, M.D. of Pittsfield, Maine assumed his duties as President of the Maine Medical Association on June 24, 1963 at the 110th Annual Session. Dr. Stein served as President-Elect from 1962 to 1963, as Council Chairman from 1961 to 1962 and as Councilor for the Fourth District from 1959 to 1962.

Dr. Stein was born in the Grantwood section of Cliffside Park, New Jersey on June 14, 1911, the son of Mr. and Mrs. Charles Stein. He was educated at the Cliffside Park Elementary School and graduated from Cliffside Park High School in 1928. He received a B.S. degree from New York University in 1932 and his medical degree from Temple University Medical School in Philadelphia in 1936. He served as an intern and resident at Queens General Hospital, New York City Department Hospital, Jamaica, Long Island, New York. Dr. Stein practiced in Great Neck and Little Neck, Long Island, New York from 1939 to 1949; and in Stockton Springs, Maine from 1949 to January, 1952, when he started general practice in Pittsfield. He is on the Courtesy Staff of Sisters Hospital and Thayer Hospital in Waterville and is at present Secretary of the Medical Staff of the new Sebasticook Valley Hospital in Pittsfield.

Dr. Stein is a member of the American Medical Association, the Maine Medical Association, a member and current President of the Waldo County Medical Society and serves as Medical Examiner for Somerset County and as School Physician for the Pittsfield Public Schools and for the Maine Central Institute.

He is a member of the Pittsfield Kiwanis Club, Pownal Masonic Lodge of Stockton Springs, Scottish Rite Bodies of Bangor, and a 32nd degree Mason and member of Anah Temple – AAONMS.

Mrs. Stein is the former Marion Valerius, R.N. of Central Islip, New York, and they have two sons, A2C Ernest, Jr., stationed at Pease Air Force Base, New Hampshire and Christian A., a junior at the Maine Central Institute, and a daughter, Valerie A., a freshman at the Maine Central Institute.

Elected at the 110th Annual Session of the Maine Medical Association

Rockland, Maine June 23, 24, 25, 1963

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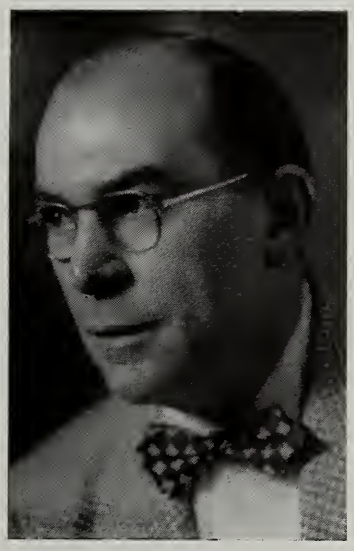

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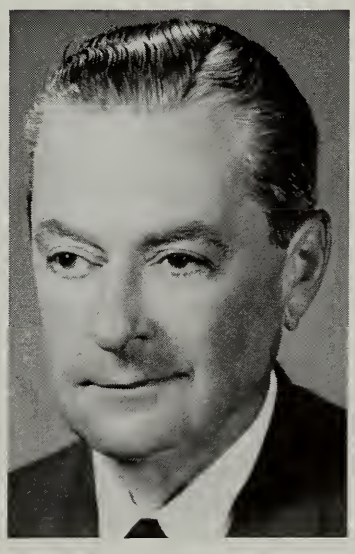

DR. DOUGHERTY

Maine Medical Association

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Continued on page 167

Maine Heart Association Notes

The Therapy Of Cardiogenic Shock

Primary failure of the heart to maintain an adequate output, as may be seen after acute myocardial infarction, can result in the clinical picture of "cardiogenic shock." . . . . . the presenting symptoms and signs . . . . . are mainly due to a decrease in circulating blood volume and bodily peripheral compensatory reactions.

The treatment of cardiogenic shock remains far from ideal, but therapy with norepinephrine, metaraminol, or both, represents a considerable advance. We disagree with the "watchful waiting" approach which has recently again been presented; indeed, our approach has been to treat persistent hypotension, as well as shock, after acute myocardial infarction.

Because norepinephrine and metaraminol are efficacious in the treatment of cardiogenic shock, their use is not necessarily justified in other types of shock. . . . . Nickerson has stated: "Cardiogenic shock . . . . . involves etiological factors sufficiently different from those responsible for other types to require that all aspects of its treatment be considered separately."

. . . . . Evidence suggests that alterations in peripheral resistance are determinants of whether shock occurs. Pooling of blood in the periphery and other changes . . . . . undoubtedly follow the initial failure of cardiac output. Norepinephrine and metaraminol are potent peripheral vasoconstrictors and there is good evidence that the rise in arterial blood pressure . . . . . is associated with an improvement in coronary blood flow. . . . . an improved coronary flow can be expected to improve myocardial contractility. Moreover, both of these vasopressor agents enhance myocardial contractility directly. These factors are . . . . . significant in explaining the efficacy of norepinephrine and metaraminol in the treatment of shock following acute myocardial infarction.

Currently there is an increasing tendency by clinicians to use angiotensin II in the treatment of cardiogenic shock. . . . . This practice should be discontinued . . . . . pending more thorough investigation.

Though norepinephrine and metaraminol lower the mortality from shock following myocardial infarction . . . . . (it) still remains high. Nevertheless, these drugs represent the best available therapy at the present time. These should not be used to the exclusion of treatment for electrolyte imbalance, congestive heart failure, arrythmias, and so on.

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County Society Notes

YORK

June 12, 1963

Twenty-three members were present at the meeting of the York County Medical Society which was held at the Notre Dame Hospital in Biddeford, Maine on June 12, 1963.

The meeting was called to order by the President, James S. Johnston, M.D., following a social hour and dinner.

Paul S. Hill, Jr., M.D. was nominated as Councilor for the First District of the Maine Medical Association. Thomas A. Martin, M.D. of Portland, whose term as Councilor for the First District expires at the 1963 annual session of the Maine Medical Association, gave a talk on state matters.

A vote of thanks was given to Dr. Martin for his fine service as our Councilor.

CHARLES W. KINGHORN, M.D.
Secretary

Necrologies

MAX HIRSHLER, M.D.

1886-1963

Max Hirshler, M.D. of Lewiston, Maine died on April 25, 1963. He was born in Frankenthal, Germany on June 11, 1886, son of Bernhard and Bertha Hirschler.

Dr. Hirshler attended the Universities of Munich, Heidelberg and Berlin, receiving his medical degree from Munich University in 1911. He practiced medicine in Ludwigshafen and Mannheim from 1920 to 1938 and was surgeon-in-chief at the Jewish Hospital in Mannheim until 1938. In 1939, he came to Lewiston and joined the staff at St. Mary's Hospital and was elected senior surgeon, a position he held until 1954. He continued his private practice until his death.

Dr. Hirshler was an Honorary member of the Androscoggin County Medical Association and the Maine Medical Association, receiving a 50-year pin in 1961. He was also a member of the American Medical Association.

Surviving are his widow, Dr. Helen Riesse Hirshler; two sons, H. Peter, Newport, Rhode Island and Eric E., Granville, Ohio.

H. EUGENE MACDONALD, M.D.

1901-1963

H. Eugene Macdonald, M.D., 62, of Saipan died suddenly on May 2, 1963. He was born on May 8, 1901, son of Harrie E. and Gertrude Morrill Macdonald.

Dr. Macdonald graduated from Bangor High School, the University of Maine in 1925 and received his medical degree from the Medical College of Virginia in 1930. He interned and served a residency at the Massachusetts General Hospital from 1930-1933.

He located in Portland in 1933 and practiced as a specialist in Neurology until 1952 when he moved to the South Pacific where he served as medical director of the Trust Territory of the Pacific.

Dr. Macdonald was a former member of the Cumberland County Medical Society, the Maine Medical Association and the American Medical Association.

Surviving are his widow, the former Rosamond Edwardes; a son, and two brothers, Dr. Maxwell E. Macdonald, Boston and Dr. Donald F. Macdonald, Bangor.

HANS V. MAUTNER, M.D.

1886-1963

Hans V. Mautner, M.D., 77, of Brookline, Massachusetts died on June 26, 1963. He was born in Budweis, Czechoslovakia on May 9, 1886, son of D. Wilhelm and Friederike Mautner.

Dr. Mautner graduated from Budweis in 1904, received his medical degree from the University of Vienna Medical School in 1909 and interned at Karolinen Kinderspital, Vienna. He was a member of the staff of the Pharmacological Institute in Vienna and was named assistant professor of pediatrics at the University of Vienna in 1925 and became chief of staff of the department of pediatrics at the Heart Hospital in Vienna in 1932. In 1957, he came to the Pineland Hospital and Training Center in Pownal and was named Pineland's first clinical director. He retired on July 1, 1962 from the active staff but remained as a consultant to the medical staff at Pineland.

He had gained world-wide recognition for his research in the field of mental retardation and was author of over 130 medical and research papers on pediatrics and mental retardation. In recognition of his outstanding achievements, the January and April, 1962 issues of the Journal of the Maine Medical Association were dedicated to him.

Dr. Mautner was program chairman of the first international congress on Mental Retardation held in Portland, Maine in 1959 and of the second international congress in Vienna, Austria, where he also presented papers.

He was a member of the Cumberland County Medical Society, the Maine Medical Association, the American Medical Association, the New England Pediatric Society, Academy of Science of New York, the Society of Experimental Biology and Medicine, the Massachusetts Medical Society and was a Diplomate of the American Board of Pediatrics.

Surviving are his widow, the former Olga M. Neuwelt and a daughter, Mrs. F. W. Arton of Natick, Massachusetts.

WATSON S. PURINTON, M.D.

1872-1963

Watson S. Purinton, M.D., 90, of Bangor, Maine died on May 29, 1963. He was born in Levant, Maine on November 2, 1872, son of Dr. Andrew M. and Mary A. C. Purinton.

Dr. Purinton attended schools in Levant and Kenduskeag and received his medical degree from Dartmouth Medical School in 1898. He began the practice of medicine in Kenduskeag from 1898 to 1919 and moved to Bangor where he practiced until his retirement in 1962.

Dr. Purinton was an Honorary member of the Penobscot County Medical Association and the Maine Medical Association. He received a 50-year pin in 1948; a 55-year pin in 1953; a 60-year pin in 1958 and was eligible for his 65-year pin at the 1963 annual session of the Maine Medical Association. He was also a member of the American Medical Association, a 32nd degree Mason, a member of the Knights Templar, Anah Temple, Order of the Mystic Shrine and the Red Cross of Constantine.

He is survived by two daughters, Mrs. Bernice B. Webster of Colorado and Mrs. Viola P. Giffin of Bangor; two sons, Dr. William A. Purinton of Bangor and Earle Purinton of Falmouth Foreside; five grandchildren and four great-grandchildren.

CAROL SCHWARTZ, M.D.

1905-1963

Carol Schwartz, M.D., 57, of Portland, Maine died on June 29, 1963. He was born in Portland on October 11, 1905, son of Louis and Ethel Schwartz.

He was a graduate of the University of Maine and received his medical degree from Tufts College Medical School in 1930. He interned at the General Hospital in Utica, New York in 1930 and Danvers State Hospital in Danvers, Massachusetts in 1931.

Dr. Schwartz practiced in Portland as a general practitioner until World War II, when he entered the U. S. Army Medical Corps and served as a captain in the Pacific theater. Following the war, he did graduate work in diseases of the eye and was a resident ophthalmologist at King's County Hospital in Brooklyn, New York for several years. He then returned to Portland and resumed medical practice as an ophthalmologist until his death.

He was a member of the Cumberland County Medical Society, the Maine Medical Association and the American Medical Association. He was an attending surgeon at the Maine Medical Center, Mercy Hospital and Portland City Hospital.

He is survived by a sister, Mrs. Arthur Eisenstadt, Newark, New Jersey and two brothers, Dr. Nathan Schwartz, Brooklyn, New York and Dr. Edward Schwartz, Chester, Pennsylvania.

News, Notes and Announcements

Drs. Cobb and Stitham Named to Medical Registration Board

Governor John H. Reed nominated Dr. Stephen A. Cobb of Sanford and Dr. Linus J. Stitham of Dover-Foxcroft as members of the Maine Board of Registration of Medicine.

Dr. Cobb is renominated and Dr. Stitham will succeed Dr. Richard L. Chasse of Waterville, whose term has expired.

Dr. Swett to Receive Special Pfizer Award of Merit Citation

Clyde I. Swett, M.D. of Island Falls, chief of health services, Maine Civil Defense and Public Safety, will be honored at the 12th annual conference of the U. S. Civil Defense Council on October 22 at Rochester, New York. He will receive the special Pfizer Award of Merit citation for his outstanding contribution to the non-military defense effort of the United States.

Department of Health and Welfare Division of Maternal and Child Health Including Services for Crippled Children (by Appointment Only)

Orthopedic Clinics

Augusta–Augusta General Hospital
1:00 p.m.: Aug. 22
Bangor–Eastern Maine General Hospital
9:00 a.m. and 1:00 p.m.: July 25, Sept. 26
Fort Kent–Peoples Benevolent Hospital
10:00 a.m.: Sept. 11
Lewiston–Central Maine General Hospital
9:00 a.m.: July 19, Aug. 16, Sept. 20
Portland–Maine Medical Center
9:00 a.m.: Aug. 12, Sept. 9
Presque Isle–Arthur R. Gould Memorial Hospital
9:00 a.m. and 12:30 p.m.: Sept. 10
Rockland–Knox County Hospital
1:30 p.m.: Aug. 15
Rumford–Community Hospital
1:30 p.m.: Sept. 18

Cardiac Clinics

Bangor–Eastern Maine General Hospital
9:00 a.m.: July 26, Aug. 9, 23, Sept. 13, 27
Portland–Maine Medical Center
9:00 a.m.: Every Friday (holidays excepted)

Cleft Palate Evaluation Clinics

Portland–Maine Medical Center
10:00 a.m.: Aug. 13

Pediatric Clinics

Bangor–Eastern Maine General Hospital
1:30 p.m.: July 26, Aug. 23, Sept. 27
Fort Kent–Peoples Benevolent Hospital
10:00 a.m.: July 24
Presque Isle–Arthur R. Gould Memorial Hospital
1:30 p.m.: Sept. 25
Waterville–Thayer Hospital
1:30 p.m.: Aug. 6, Sept. 3

Clinics for Mentally Retarded Preschool Children

Waterville–Thayer Hospital
9:00 a.m.: July 31, Aug. 7, 21, Sept. 4, 18

Adolescent Clinics

Portland–Maine Medical Center
1:00 p.m.: July 24, Aug. 28, Sept. 25

Cystic Fibrosis Clinics

(In conjunction with the Maine Medical Center, Portland)
Portland–Maine Medical Center
9:00 a.m.: Aug. 20, Sept. 17, 18

(In conjunction with the Central Maine General Hospital, Lewiston)
Lewiston–Central Maine General Hospital
9:00 a.m.: Aug. 2, Sept. 6

American Board of Obstetrics and Gynecology

The next scheduled Part I (written) Examination of this Board will be held at various examining centers in the United States, Canada, and military bases outside of the continental United States on Friday, December 13, 1963 at 2:00 p.m. Candidates eligible to take this examination will be notified on or about November the first where to appear for examination.

SPECIAL NOTICE

PART I EXAMINATION (written), commencing in 1965, will be conducted in July at designated centers in the United States and Canada. Requirements, application, procedure, fees, etc., will be published in the 1964 Bulletin.
Candidates whose residency will be completed on or before June 30, 1965 will be eligible to make application to take the examination in July, 1965.

The 1963 Bulletin of this Board is now available and prospective applicants are urged to request this brochure and thoroughly familiarize themselves with the current rules and regulations before making application. Bulletins may be obtained by writing to — Robert L. Faulkner, M.D., Executive Secretary and Treasurer, American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

Diplomates of this Board are requested to inform the Secretary's office of any change in address.

Annual Otolaryngologic Assembly

October 5 through 11, 1963

The Department of Otolaryngology of the University of Illinois College of Medicine and the Illinois Eye and Ear Infirmary will offer an intensive postgraduate basic and clinical program under the direction of Doctor Emanuel M. Skolnik. This Assembly for practicing otolaryngologists offers a condensed one week program. It is designed to bring to specialists basic information and a wide variety of current advances in medical and surgical management. Basic sciences are reviewed by means of discussions augmented by visual aids.

Panel sessions have been designed to emphasize otologic and reconstructive surgery, tumors of the head and neck, otoneurology, and audiology. Luncheon chats with question and answer periods are an important part of the daily instructional program.

Interested physicians should direct communications to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

Book Reviews

Curare and Curare-Like Agents. Ciba Foundation Study Group No. 12 — Edited by A. V. S. De-Rueck, M.S.C., D.I.C., A.R.C.S. Published by Little, Brown and Company, Boston 1962. Cloth, Pp. 103 with 26 figures. Price $2.95.

This small volume contains the remarks of a group of prominent research workers in the field of muscle relaxants. It is broken down into five basic presentations each being followed by a group discussion. Sandwiched between the opening and closing remarks of the conference chairman, who admitted being confused, were erudite discussions on the fate of curare, influence of curare on uptake and release of an I_{131} labelled neuromuscular blocking agent, structire-action relationships and experimental hazards in studying neuromuscular blockers. Some new theories on mechanisms of action of neuromuscular blocking agents were propounded but most were based on work done in vitro, the results of which the conferees agreed differed from in vivo observations. Response was also found to vary with species studies and with the amount and type of electrical currents used.

This book offers a concise up to date record of the opinions of some fundamental researchers and a good bibliography. However it contains no practical information for the clinician and would be of value only to other researchers in the field of muscle relaxants.

HOWARD P. SAWYER, JR., M.D.
Portland, Maine

Immunoassay of Hormones. Ciba Foundation Colloquia on Endocrinology, Volume XIV—Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P. and Margaret P. Cameron, M.A. Published by Little, Brown and Company, Boston 1962. Cloth, Pp. 419 with 85 illustrations. Price $10.75.

The concept that various hormones were potent antigens had its start in the 1930's, however, strides in further elucidation and clinical application of such knowledge were slow until the elegant laboratory techniques of hemagglutination, compliment-fixation, geldiffusion and immunoelectrophoresis became widespread. This primarily has occurred during the last decade during which time there have been "explosive advances" in the measurement and consequently in the understanding of hormonal metabolism and hormonally affected processes.

Ciba's 14th colloquia brings together an impressive group of the world's authorities on hormone metabolism who discuss formally and informally their already known and published work and even more their fascinating unpublished findings and impressions of previous and present problems.

This text is excellent for anyone interested in setting up investigation into hormone kinetics or simply to learn the uses and vagaries of immunological assay. An extensive discussion of studies on growth hormone, insulin, glucagon, thyroglobolin, thyrotropin, prolactin and interstitial cell stimulating hormone is presented. Of additional value is a full and pertinent bibliography following each section.

ROBERT F. RITCHIE, M.D.
Portland, Maine

STANDING COMMITTEES 1963-1964

Continued from page 160

Committee On Credentials

Charles R. Glassmire, M.D., 58 Deering St., Portland (1 yr.) – Chairman
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Thomas G. Harvey, M.D., 59 Mayo St., Caribou (2 yrs.)
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Maine Radiological Society – John F. Gibbons, M.D., 22 Bramhall St., Portland
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Prevention Of Nausea And Vomiting In The Recovery Room, A Double-Blind Study

Richard A. Marshall, M.D., Howard P. Sawyer, Jr., M.D.,
Elio Baldini, M.D. and John R. Lincoln, M.D.*

This study was designed to evaluate the effectiveness of three drugs with antiemetic properties in the prevention of postoperative nausea and vomiting in the recovery room.

Although the incidence of postoperative vomiting has decreased in the last twenty years it is still a frequent, if not serious complication. A report in 1936 noted an average incidence of 40.6% vomiting in the postoperative period.[1] In 1961 a study of 2,230 patients disclosed a 23% incidence of postoperative vomiting.[2] The decrease in the occurrence of this complication has paralleled the advent of new anesthetic drugs and improvements in the management of patients during and after anesthesia.[3]

Antiemetic drugs in common use include certain antihistamines, tranquillizers of the phenothiazine group, sedatives and combinations of these. The drugs used in our investigation were trimethobenzamide (Tigan®), cyclizine (Marezine®), methiomeprazine (S K F 6270) and placebo.

Tigan belongs to a class of compounds for which antiemetic properties have not previously been reported. Serious untoward effects associated with its use have not been reported, even in daily doses of as much as 800 mgm for several weeks.[4] Antiemetic properties of trimethobenzamide appear to be due to its specific activity at the chemoreceptor trigger zone in the floor of the fourth ventricle.[5]

Marezine has both an atropine-like action and an antihistamine action.[6] Bellville, Bross, and Howland did not observe hypotension resulting from cyclizine administration, and sleeping-time was only slightly prolonged.[7]

S K F 6270 has been used in psychiatric patients for its ataractic qualities with no serious side effects.[8] Investigation has shown it to be eleven times more potent than thorazine in blocking apomorphine induced emesis. Relative freedom from side effects has been demonstrated by clinical testing.[9]

Method

Drugs and placebo used in this study were supplied in ampules coded in eight distinct colors. Some ampules contained 2 cc of solution and others 1 cc. Each ampule contained one of the following: trimethobenzamide, 200 mgm; cyclizine, 50 mgm; methiomeprazine, 4 mgm, or placebo. During the study no untoward effects necessitated breaking the sealed code. To further conceal the identity of the drugs, the contents of randomly-selected color-banded ampules were drawn up in consecutively-numbered 2 cc syringes and the contents of the 1 cc ampules diluted to 2 cc with saline. Color of the ampule and the number of the syringe were recorded. All the syringes contained 2 cc of clear liquid and appeared identical except for the number marked on them.

The drugs were administered intramuscularly by staff anesthesiologists, residents and nurse anesthetists about fifteen minutes prior to the end of operation and a note made on the patient's record as to the number of the syringe. Children under fourteen years of age and

*Department of Anesthesiology, Maine Medical Center, Portland, Maine.

TABLE 1

Comparison of incidence of nausea and vomiting in drug and placebo groups

Case classification	*Antiemetic*	*# Pts.*	*# N, V, or N & V*	*%*
Abdominal-intubated	active drug	64	17	27%
	placebo	26	14	54%
Abdominal-nonintubated	active drug	73	24	33%
	placebo	20	9	45%
Nonabdominal-intubated	active drug	110	17	15%
	placebo	44	21	48%
Nonabdominal-nonintubated	active drug	423	56	13%
	placebo	172	15	9%
Overall	active drug	670	114	17%
	placebo	262	59	23%
	Total	932		

TABLE 2

Incidence of nausea & vomiting by duration of operation

Duration of Operation	*#Pts.*	*#N,V, or N&V*	*%*
Under 1 hr.	364	39	11%
1-3 hr.	489	109	22%
Over 3 hr.	78	25	32%
Total	931		

TABLE 3

Incidence of nausea & vomiting by age

Age	*#Pts.*	*#N,V, or N&V*	*%*
14-20	68	20	29%
21-30	82	23	28%
31-40	179	36	20%
41-50	155	24	16%
51-60	156	38	24%
61-70	151	23	15%
Over 70	125	10	8%
Total	916		

women having Caesarean section were not included. The recovery room nurses noted nausea, vomiting or both and at the end of the day the investigator who prepared the syringes recorded on a master sheet the number of the syringe, ampule color, age of the patient, sex, operation, anesthetic agents, muscle relaxants, use of an endotracheal tube, duration of operation and time of nausea, vomiting or both. Not until the end of the study were the contents of the ampules known.

Results

Data are available for a total of 932 surgical patients each of whom received, about fifteen minutes prior to the end of operation, a single injection of one of the four preparations noted above. The cases were classified as abdominal-intubated, abdominal-nonintubated, nonabdominal-intubated and nonabdominal-nonintubated. Throughout the rest of this report the term *emesis* will be used for convenience to indicate nausea or vomiting or both. The results of the study are tabulated (see Tables 1-3) and are summarized as follows:

1. The over-all incidence of emesis observed with placebo in this study was 23% which corresponds closely to the results of a previous two year study in which the incidence of emesis of all patients arriving in our recovery room was 25%. The over-all incidence of emesis in the group treated with active drugs was 17% which demonstrates a significantly lower incidence of emesis associated with the antiemetics which we used. (Table 1)

2. The proportion of patients who experienced emesis increased significantly with the duration of operation. (Table 2)

3. The incidence of emesis was not constant among the ten year age groups. (Table 3) For patients over 50 years of age the incidence was 16% as opposed to 21% for patients under 50 years which is a difference approaching statistical significance.

4. Almost two-thirds of the patients in this study had operations outside the abdomen and were not intubated. Over half of these patients had procedures lasting less than one hour. Statistical analysis revealed that the incidence of emesis was significantly lower in nonabdominal-nonintubated patients than in the remainder of the sample. Comparison of placebo with the three active drugs disclosed no significant difference in the incidence of emesis in this group.

5. In the abdominal-nonintubated group of patients the slight difference in the incidence of emesis between those who received an antiemetic and those who received placebo was not statistically significant.

6. The observed incidence of emesis in the nonabdominal-intubated group was 48% for placebo and 15% in the group receiving the active drugs, which is a statistically significant difference. The differences among the three active compounds were not significant.

7. The three active drugs significantly reduced the incidence of emesis after abdominal operations on patients who had been intubated. No superiority of one drug over another could be reliably demonstrated by analysis of the number of cases which we studied. Further study of this group, and the group immediately preceding (paragraph 6 above) reveals that out of 77 patients having operations lasting over three hours, 51 were intubated and 44 received potent inhalation anesthetic agents which are prone to produce emesis. It was the combined group of intubated patients in which antiemetics significantly reduced the incidence of emesis.

In the table of nausea and vomiting by age, the total number of cases is 916; in the table of duration of operation, the total is 931; and in the table of drug codes, the total is 932. These discrepancies are due to missing information on age or operation for some of the patients.

Discussion

Our study confirms reports that the use of antiemetics prophylactically significantly lowers the incidence of postoperative nausea and vomiting in some circumstances. The very large number of variables which defy control, however, make interpretation of even the most carefully-controlled study extremely difficult.[2] Such variables include:

(1) the effects of preanesthetic and postoperative narcotics, presumably on the emetic center;[10]

(2) the effects of rough handling and changes in body position on the vestibular apparatus;[10]

(3) hypoxia during and after anesthesia;

(4) the presence of a gastric tube, which may reduce the incidence of emesis,[11] or have no effect;[3]

(5) disturbances of water or electrolyte balance;[11] and

(6) psychic and miscellaneous factors.

Our results would seem to indicate that antiemetics are least effective in preventing emesis in the group of patients who were not intubated, and who had operations outside the abdomen. This is probably explained by the fact that a large number of these patients had short operations and anesthetic agents which do not usually produce nausea and vomiting, whether or not an antiemetic is used.

There is no evidence from our study that antiemetic drugs should be employed routinely before anesthesia and operation. Adriani observed that vomiting on emergence from anesthesia in most cases is self-limited and quickly over. He stated that if they had adopted the custom of prophylactically administering antiemetics to all patients 4,600 would have received the drug instead of 140 who needed it.[2] Marcus and Sheehan noted that, "Cessation of this complication in the treated patients would be more significant if it were not for the fact that approximately 60% of all patients have only one episode of vomiting without treatment."[11]

Summary And Conclusion

Trimethobenzamide (Tigan), cyclizine (Marezine), methiomeprazine (S K F 6270) and placebo were administered individually in a random manner to 932 patients at the end of various types of operations. Their effects on the prevention of nausea and vomiting in the recovery room were observed, using a double-blind technic.

The incidence of nausea and vomiting was significantly lower in patients who had received an antiemetic drug (17%) than the incidence in patients who had received the placebo (23%).

Antiemetic drugs were effective in preventing nausea and vomiting in patients who had had long operations, potent inhalation anesthetics and had been intubated. Conversely, no significant protection was revealed in patients who had had short operations, anesthetics that are less prone to produce nausea, and in whom endotracheal tubes had not been used.

The many variables that could not be controlled in this study, and the relatively small number of observations in each group of apparently-comparable individuals made valid comparisons of the relative effectiveness of the three drugs impossible.

These studies confirmed the observations of others that the incidence of postanesthetic emesis is roughly proportional to the duration of the operation, and is less frequent in patients over the age of 50.

The routine prophylactic use of antiemetics at the time of operation cannot be supported on the basis of our findings. However, in instances where the success of an operation may be jeopardized by vomiting, such as certain ophthalmological procedures, a prophylactic antiemetic might have some benefit. Such an indication for prophylaxis would be strengthened if endotracheal tubes and potent anesthetics were to be required for long operations. It is common practice for us to employ one or more antiemetic drugs in the treatment of emesis when it occurs.

Acknowledgements

The color banded ampules of drugs and placebo were supplied through the courtesy of Smith, Kline & French Laboratories, 1500 Spring Garden Street, Philadelphia 1, Pa.

The statistical analysis was done through the courtesy of Burroughs Wellcome & Co. (U.S.A.) Inc., 1 Scarsdale Road, Tuckahoe, N. Y.

Support of this study was also shared by Roche Laboratories, Division of Hoffman-LaRoche, Inc., Nutley 10, N. J.

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Mannitol Therapy — Current Status

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I. Introduction

Mannitol is the alcohol of the six-carbon sugar mannose. Its molecular configuration is very similar to that of glucose (Fig. 1).

In spite of its structural similarity to glucose, mannitol is not metabolized to any significant degree. It is freely filtered at the glomerulus of the kidney and is not resorbed from the renal tubules. Mannitol is a small particle; it diffuses slowly from the blood stream and remains in the extracellular compartment. These characteristics make the drug an ideal osmotic diuretic.

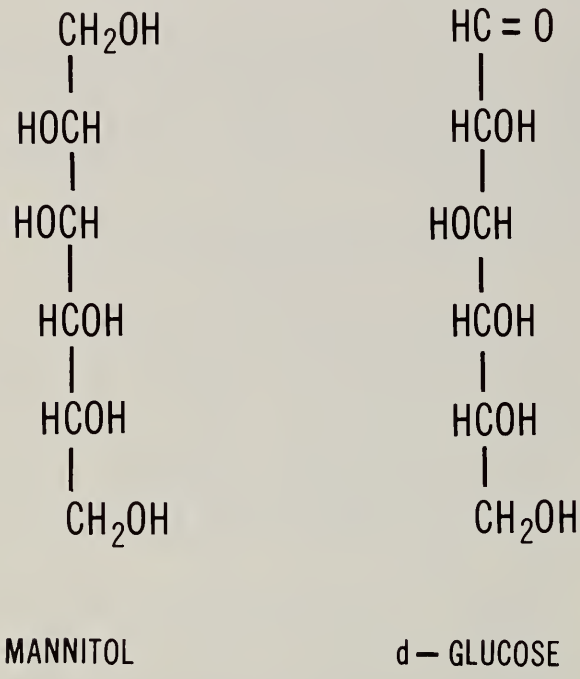

Figure I

Comparison of the molecular structures of mannitol and d – glucose.

Mannitol has been used for many years as an osmotic diuretic for research in renal physiology. The ability of mannitol to protect the kidneys during renal ischemia was described first in 1945[1]. Until four years ago, however, the only clinical use of mannitol was for the measurement of the glomerular filtration rate. Since 1959 mannitol has been used in a wide variety of clinical situations.

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II. Current Clinical Uses

Vascular Surgery

The first recent reports of the clinical use of mannitol concerned its use in the prevention of the acute functional renal failure associated with abdominal aortic aneurysmectomy.[2,3] The problem of renal failure following this operation has been well documented in the literature.[4,5] One study reported that 15% of deaths following abdominal aortic aneurysmectomy were due to acute renal failure.[6]

Many theories have been advanced as to the mechanism of this acute renal failure. One widely held theory is that cross-clamping the abdominal aorta below the renal arteries initiates a reflex via the sympathetic nervous system which causes renal arteriolar constriction and ischemia.[5] Other possible causes include artheromatous emboli to the kidneys from aortic manipulation [4,8] and blood loss with resulting shock.[9]

In the past, measures to overcome this problem have included infiltration of the renal artery adventitia and the periaortic plexus with a local anesthetic solution,[7] local hypothermia of the kidneys, and controlled hypotension with Arfonad.®†[5] Although constriction of the renal arterioles is prevented by Arfonad®, the systemic hypotension that accompanies its use may compromise cerebral and coronary circulations.

It has been shown that mannitol reverses the depression of renal plasma flow, glomerular filtration rate, and urinary flow rate which occurs with cross clamping the abdominal aorta below the renal arteries.[2,3,10] Whelan[11] reported that patients who had adequate mannitol infusions during resection of abdominal aortic aneurysms had a lower mortality rate due to renal failure and less increase in the BUN postoperatively than did the patients who did not receive mannitol.

Studies were carried out in our institution to determine the effectiveness of mannitol in the prevention of renal failure following abdominal aortic surgery. A 20% solution of mannitol was infused at the rate of 300 cc./hr. to these patients. The infusion was started approximately 30 minutes before aortic clamping. After aorto-iliac continuity was re-established, the clamp removed from the aorta, and the hypotension resulting from redistribution of blood to the lower limbs was reversed, the infusion was discontinued. Five percent mannitol was infused postoperatively when necessary to keep the urine output over 50 ml/hr.

†Trimethaphan camphorsulfonate, Roche Laboratories, Nutley, N. J.

TABLE I

RESULT OF MANNITOL INFUSION IN ABDOMINAL AORTIC SURGERY

Total No. cases:	16 treated–2 controls
Average No. grams mannitol used:	223 gms (range 140-350)
Average time aorta clamped:	83 min. (range 30-125 min.)
Mean urinary output during operation:	1600 cc (range 900-3100 cc)
Mean urinary output during aortic clamping	5.2 ml/min.
Mean urinary output of control patients during aortic clamping	0.5 ml/min.
Mannitol Treated	
No. Elective cases:	13
Mortality:	3
No. Ruptured aneurysms:	3
Mortality	1

The results of our series are shown in Table 1. Sixteen patients received mannitol and 2 patients, used as controls, received 5% dextrose in water as infusions instead of mannitol. The two control patients averaged 0.5 ml/min urinary output during aortic clamping compared to 5.2 ml/min for the mannitolized patients.

Two patients in the group of unruptured aneurysms died postoperatively of causes unrelated to renal failure. One patient in this group died of renal failure in spite of artificial dialysis. This patient's renal failure in the face of adequate mannitol therapy was discovered at autopsy to be due to complete infarction of the small intestine.

The one death in the group of ruptured aneurysms was an operating room death. One of the two patients who survived operation for ruptured aneurysm had been anuric for 16 hours and in shock for four hours preoperatively. This patient began to exhibit diuresis after the first 30 minutes of mannitol infusion and diuresis continued into the postoperative period. There was no postoperative oliguria in either of the surviving patients. Since the completion of this study we have utilized mannitol in two more patients with ruptured aneurysms, both of whom have survived without evidence of renal failure.

In our study the only adequately mannitolized patients who developed oliguria during the first 48 postoperative hours were individuals in whom electrolyte imbalance, dehydration, hypovolemia, or an intra-abdominal catastrophe were found to have developed.

In the treatment of ruptured aneurysms, mannitol was started before operation along with blood and fluid therapy. The only untoward effect that could be attributed to mannitol was severe hyponatremia that occurred in the early postoperative phase in both surviving patients with ruptured aneurysms.

Mannitol has also been used effectively following open heart surgery to decrease the incidence of postoperative renal failure.[12] Mannitol prevents the high plasma hemoglobin levels associated with prolonged extra-corporeal circulation.[13] This effect seems to be exerted by mechanisms other than the renal excretion of the hemoglobin.[13]

Renal Failure

Mannitol has been used therapeutically in patients with oliguric renal failure.[14,15] Barry and Malloy[14] reported that mannitol may prevent oliguria which has been precipitated by extra renal factors from progressing to total organic renal failure. Examples of extra renal factors are hypotension from any cause, dehydration, and extensive body trauma. These authors suggest that, after a test dose, mannitol be administered at a rate which will maintain the urinary output at 100 ml/hr. as soon as the diagnosis of oliguria (urine output below 20 ml/hr.) is made. If the patient does not respond to an appropriate test dose, he should then be put on a conventional renal-failure regime.[14,15]

The infusion of a test dose of mannitol is valuable in the evaluation of postoperative oliguria. If an oliguric patient, who has a patent urinary outflow tract, adequate hydration, and a stable circulatory status, does not respond within 2-3 hours to an infusion of mannitol, the diagnosis of acute renal failure should be strongly considered.

The mechanism by which mannitol exerts its renal protective effect is not known. The theory has been advanced that the high volume of urine flow engendered by mannitol prevents the accumulation of hemoglobin, myoglobin, and cell casts in the renal tubules during periods of body trauma and hypoxia.[16] It has also been postulated that the dissolved mannitol in the tubules maintains intraluminal volume and prevents compression of the tubules by interstitial edema.[14]

Generalized Edema

Mannitol has been used effectively for diuresis in ascites,[17] congestive heart failure,[18] and nephrosis.[19] It seems to have been most effective when employed in conjunction with chlorothiazide and mercurial diuretics.[17] In our limited experience, net water loss in patients with congestive heart failure has been increased with mannitol in only a small percentage of cases. Mannitol should probably be tried only as a last resort if other measures fail.

Cerebral Edema

Hypertonic mannitol has been used to lower cerebrospinal fluid pressure and decrease brain bulk.[20,21,22] Wise and Chater[21] have noted the effect on brain mass within fifteen minutes of the start of the infusion.

Mannitol has two advantages over hypertonic urea, another osmotic diuretic which has been used to reduce brain mass. First, urea sometimes causes severe thrombophlebitis, and local tissue reaction[23], a complication which has not been attributed to mannitol; and second, urea eventually enters the cells and causes a secondary

increase in pressure as rehydration of the cells proceeds. Mannitol remains extracellular and causes little, if any, "rebound phenomenon."[20]

Shaw[24] and co-workers found that neither mannitol nor urea increased the survival time in dogs after elective cerebral circulatory occlusion. Of those dogs which survived, however, all those who had had mannitol exhibited no neurologic sequelae. On this basis these authors suggest that mannitol may be useful in conjunction with hypothermia and other measures to treat the cerebral edema that follows severe cerebral hypoxia.

Miscellaneous Uses

Mannitol has been reported to decrease the sleeping time after secobarbital intoxication by increasing renal clearance of the drug.[25] It has also been used with benefit in imipramine intoxication,[26] carbon tetrachloride intoxication,[27] and uric acid nephropathy.[25]

There have been reports that mannitol is useful in reducing intraoccular pressure in glaucoma.[28,29] The onset of action is from fifteen to thirty minutes, it reaches a peak at one hour and lasts for six hours.

Nesbit[27] and associates are presently conducting a study to determine if the prophylactic administration of mannitol, during and after major surgery, will decrease the incidence of acute postoperative renal failure. Preliminary observations indicate that mannitol may be effective in this respect.

III. Physiological Distribution And Excretion Of Mannitol.

Hypertonic mannitol infusion causes an initial expansion of the plasma volume as extravascular water moves into the vascular space to normalize plasma tonicity. A state of equilibrium in body fluids is reached about 30 minutes after a single intravenous injection of mannitol.[30] When 500 ml. of 20% mannitol is infused over a ninety minute period, a standard clinical practice, plasma volume increases during the first 30 minutes of the infusion, and then begins to fall as the kidney excretes mannitol and water.[18]

Patients without renal, cardiac, or endocrine disease excrete approximately eighty per cent of a dose of mannitol in three[31] to twelve[30] hours. Patients with congestive heart failure or renal disease may excrete as little as 14% of a total dose in 20 hours.[31] It should be emphasized that the drug can only be excreted by the kidney and is not metabolized to any significant extent.

IV. Complications And Side Effects Of Mannitol Therapy.

Many patients who die within forty-eight hours of mannitol infusion exhibit the renal findings of "osmotic nephrosis."[32] This lesion consists of vacuolization of renal tubular cells and widening of the lumen of the proximal convoluted tubules.[33] The more extensive lesions are found following doses of 300 grams or more. These pathologic findings are not found if the patient has died more than forty eight hours after the cessation of mannitol.[32] Experimental work in dogs indicates that the histologic changes of osmotic nephrosis are temporary and disappear spontaneously.[34]

There have been two reported cases of patients, without known central nervous system disease, who died after convulsions which occurred during mannitol infusion.[32] Barry and Malloy[14] observed signs of water intoxication in three critically ill patients, each of whom had received 200 grams of mannitol in 8 hours, with a urinary output below 60 ml/hr. These authors suggest that no more than 100 grams of mannitol should be infused in a 24 hour period unless the urinary output is over 100 ml/hr.

Large numbers of patients with cardiovascular disease have been subjected to mannitol infusion without evidence of circulatory overload;[18] however, large doses of mannitol without a concomitant diuresis may result in congestive heart failure in such patients.[18]

Hyponatremia and hypochloremia have been reported following mannitol infusion, and we noted this in two cases in our series of mannitol infusions administered during abdominal aortic surgery. There is considerable natruresis with associated hyponatremia in unanesthetized resting humans after infusions of mannitol.[35,36] From a study of electrolyte washout with mannitol during surgery, we have concluded that while urine salt losses are variable, there is no measurable effect on serum sodium in the dose range of 100 grams.[37] A factor which contributes to hyponatremia during mannitol infusion is concurrent sodium loss into the gastrointestinal tract, peritoneal cavity, or large areas of tissue destruction. High doses (300-500 grams) of mannitol with the resulting high urine output or dilution of extracellular electrolytes also cause decrease of serum sodium.

Other side effects include transient chills,[19] thirst, headache, and slight constriction or pain in the chest.[38]

V. Dosage And Administration

Mannitol should only be administered by the intravenous route. At present the drug is available in 50 ml ampules of 25% solution. This solution is super-saturated and there may be crystal formation which will be reversed by heating the ampule. It is expected that mannitol will soon be available commercially in solutions of 5%, 10%, and 20% concentrations.*

It should be emphasized that an indwelling bladder catheter is necessary if the patient is under anesthesia or has his sensorium clouded in any way. We have noted urine volumes as high as 5,500 ml. in a twenty four hour period, in patients undergoing mannitol diuresis.

Dosage ranges from 50-200 grams per 24 hours in adults, and is varied, as is the rate of administration,

*Osmitrol® brand of mannitol, Baxter Laboratories, Morton Grove, Ill.

with the clinical situation. In general, we observed the dosage schedules which are currently recommended by Baxter Laboratories,[28] as follows:

1. To protect renal function during aortic surgery; 50 to 100 grams of mannitol in 20% solution are infused during operation. Postoperatively a 5% solution may be used to promote a mild diuresis.
2. For the treatment of oliguria; a test dose of 0.2 gm/Kg is given over a three minute period. If the response is less than 40 milliliters of urine per hour, no more mannitol is administered. If the patient responds with a urinary output of more than 40 ml/hr. over a 2-3 hour period, 100 grams of mannitol is then infused over a period of 24 hours. The concentration used and the rate of infusion will depend on the clinical situation.
3. For lowering brain volume, cerebral spinal fluid pressure, or intraocular pressure; a dose of 1.5-2.5 gm/Kg of mannitol in a 20% solution may be administered over as short a period as thirty minutes, provided cardiac and renal function are normal. If heart or kidneys are diseased, longer infusion time should be employed.
4. For diuretic purposes in edema and ascites; a dose of 100 grams of mannitol in a 20% solution may be administered over a 4-8 hour period. The patient should be watched carefully for signs and symptoms of cardiac decompensation. Mannitol diuresis will be more effective if used in conjunction with either mercurial or chlorothiazide diuretics.
5. For diuresis in drug intoxication; a continuous infusion of 5 or 10% mannitol may be given, with a total 24-hour dosage of about 200 grams. The infusion should be continued as long as clinically indicated, provided urinary output is adequate.

Summary

Mannitol is effective in protecting renal function during and after operation on the abdominal aorta. Its osmotic properties also make it an important part of the management of cerebral edema.

Use of mannitol should be considered in the diagnosis and treatment of oliguria and renal failure, to produce diuresis in certain drug intoxications, and to prevent the rise in plasma hemoglobin which occurs during prolonged cardiopulmonary bypass. Mannitol may be a useful adjunct in the treatment of edema which does not respond to usual measures.

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Treatment Of Pollen Hay Fever And Asthma With Repository Injections

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In 1911, Noon[1] first published his paper on prophylactic therapy. For over a half century, allergic patients have been treated with good results for their inhalent sensitivities by means of repeated injections of specific aqueous extracts over a period of months or years. Since Spain's[2] efforts 22 years ago to reduce the number of injections in the treatment of hay fever by using a slowly absorbed pollen extract in gelatin, others have tried to accomplish the same thing through the use of pollen tannates and various suspensions or emulsions of antigens made with vegetable or mineral oils.

In 1937 Freund[3] et al injected guinea pigs and rabbits with a mixture of paraffin oil and killed tubercle bacilli, and revealed an enhancement of tuberculin sensitivity and anti-body formation. Oils that enhance the immune response have been referred to as adjuvants. Oils combined with killed bacteria are referred to as complete adjuvants. In 1944, Friedewald[4] injected mice with influenza vaccine emulsified in an incomplete adjuvant. He was able to demonstrate a higher and more prolonged immune response than could be produced by influenza vaccine injected in saline. Salk[5] et al also compared antibody titre produced by injecting influenza vaccine in saline and an equal amount injected using an incomplete adjuvant. Arlacel A (mannide monoleate) and Bayol (a light mineral oil) were the adjuvants used. Saline extracts produced a 1-128 antibody titre. Emulsified extracts produced a 1-8192 antibody titre.

By incorporating large amounts of ragweed pollen extract in a modified form of Freund's adjuvant, Loveless[6] has been able to report success in the treatment of ragweed hay fever with a single repository injection each year. The dosage of ragweed pollen administered in this repository form was varied from 5,000 to 10,000 protein nitrogen units (P.N.U.), depending on the patient's sensitivity by conjunctival test. In 1957, she reported no cysts, abscesses, or malignant degenerations in 1,200 repository injections given over a 9-year period. In 1960, she reported[7] an incidence of 5% adverse reactions when using repository injections compared to 7% following the conventional aqueous injections. The clinical effectiveness appeared to be the same with the use of either method of treatment. She felt results with repository therapy and conventional therapy were comparable.

Brown[8–12] has reported voluminously on the results of repository therapy in inhalant allergic disease. His methods and techniques on emulsion therapy have given the greatest impetus to over 500 allergists who are now using this method as a practical office and clinic procedure. He has stated that the fears of carcinogenesis and of droplets of mineral oil in the circulation are the products of vivid imaginations. Fursten-

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berg,[13] Berman,[14] Aranoff,[15] Sabel,[16] Eisenberg,[17] Caplin,[18] and many other allergists have reported on the efficacy of adjuvants in the treatment of inhalant allergies. Arbesman,[19] and Delorme[20] have reported on anti-body response to injections of adjuvant-allergen emulsions.

Davenport[21] in a review of adjuvants stressed their enhancement of the immune response. He stated that from 1944 to 1961 more than 100,000 doses of adjuvant-influenza virus vaccine emulsions have been administered. No evidence of carcinogenicity has been found in spite of rumblings in the background. Davenport also stated that no evidence has been found that the use of adjuvants induces allergic symptoms in man. Feinberg,[22] has reported on the development of delayed hypersensitivity to ragweed in non-allergic individuals injected with ragweed emulsion.

The experience of Salk, and others, has not shown mineral oil emulsions to be carcinogenic or to present any significant risk of producing sensitization. In addition, current investigation by the oil refining industry fails to show that injections of large amounts of highly refined mineral oil induces cancer in laboratory animals.

According to Davenport,[21] the results of studies on the mechanism of action of mineral oil adjuvants explain in part why they are so effective. It was shown early by Freund and associates that an adjuvant effect could be induced far more readily by the use of mineral oils than by the use of animal or vegetable oils. Furthermore, for success, it was found necessary to incorporate the antigen in a water-in-oil emulsion, coating it with a non-metabolizable substance. These findings immediately suggested that one of the advantages of the mineral oil adjuvants was protection of the antigen against destruction by humoral factors or by cells incapable of engaging in antibody production.

Studies on the distribution of mineral oil emulsions after inoculation, have shown that a large part of the injected mass persists locally for many months. A portion, however, migrates very early to regional lymph nodes, and later more may be found in remote lymph nodes or at other sites. Thus, the emulsified inoculum appears to serve not only as a local protected depot of antigen but also as a source of emulsified antigen, which slowly and progressively leaves the depot in a shielded state, and reaches through the lymphatic system, remote foci, where it is believed the emulsion breaks down, and antibody production is stimulated in suitable cells. Probably the macrophages which accumulate about the antigen depot play an important role in the transportation of the emulsion droplets. The net result provides not only an effective primary but an efficient "built in" booster stimulus to antibody formation.

Many allergists have reported on the formation of nodules, cysts, sterile and infected abscesses with the use of emulsion therapy. This complication has been a deterrent in the wide acceptance of this treatment in the field of allergy. The exact cause of these serious problems has not been determined in every case. Direct trauma to the injected site has been implicated in some cases. Lockey[23] has revealed bacterial contamination of the emulsion as a source of difficulty. Scherr[24] postulated that metal particles in the process of emulsification might be a contributing factor. The final answer awaits further study.

Local and constitutional reactions have been reported by different allergists. These have varied anywhere from 0.4% to 16%. In one of the earlier studies carried out at the Mayo Clinic, Henderson,[25] reported that of 41 patients treated, 10 suffered local reactions and 17 reacted with systemic reactions. Caplin[18] reported a reaction rate of 6% in a group of 395 patients receiving emulsion therapy. Sobol[16] reported an overall reaction rate of 16% in 103 patients, while Green[26] had 0.4% reactions with 516 patients.

Materials And Methods

The adjuvant used throughout this study was Daroil® obtained from Center Laboratories. Daroil contains 35% Arlacel® A (mannide monoleate) and 65% Drakeol® 6V R (a light mineral oil). All materials were tested by Center Laboratories for toxicity in animals prior to distribution. Since there are many types of emulsifying machines which are being used, the details of this mechanism will not be described. The material emulsified by me consisted of the use of a Swinny adapter, which is constructed of chromiumplated brass, fitted internally with Teflon sealing gaskets. All material was emulsified for at least one hour in its preparation, through a 16 or 18 guage double-hub needle. The emulsions were put through the machine for at least 15 minutes before being given to the patients. All specimens were checked by the Brown quality emulsion machine and examined microscopically, so that the largest particles were less than 1 micron in diameter. All materials were subjected to careful handling and cleansing with sterile procedures. A total volume of 1 cc for each injection of emulsion was used in this study, according to the technique of Brown.

All injections were given subcutaneously in either the right or left arm by me, (using a 25 guage 5/8 inch needle. (In a subsequent series for 1963, this volume has been reduced to ½ cc, and the length of the needle used now is 25 guage 7/8 inches). Disposable syringes and needles were used in all cases. The skin was sterilized with aqueous Zephiran® solution. Ambodryl,® 25 mg. was given to each patient at the time of the injection. The antigens used were Ragweed (dwarf and giant), Mixed Grasses (timothy, june grass, red top, orchard, and sweet vernal) and Mixed Trees (maple, elm, oak, birch, ash, beech, hickory, and poplar).

Report of Cases

This report covers a total of 261 private patients who were treated for pollen hay fever or asthma during 1962. The group

TABLE I

Results of Emulsion Therapy

	Total no. patients	*good*	*No improvement*	*% good results*
Tree Pollen	38	32	6	84%
Grass Pollen	97	72	25	74%
Ragweed Pollen	126	98	28	78%
Grand Total	261	202	59	78%

included 126 ragweed patients, 97 grass sensitive patients, and 38 who were allergic to the tree pollens. Some of these patients had previously received conventional multiple visit aqueous therapy. The injections were started at least 2 to 4 months before the onset of the particular pollen season. Each patient received an average of three injections for each pollen sensitivity. However, the emulsions were combined so that as a patient received a final dose of one pollen, a primer dose of another pollen emulsion was given in the same syringe. The usual initial dose was 500 units, followed by booster doses ranging from 1,000 units up to 11,000 units. The dosage tolerance and response to therapy in previous years was used as a guide in some patients. Skin tests reactions were also carefully considered in other individuals. As therapy progressed, the dose was often based on the tolerance to a previous primary and secondary injection. The injections were given at 4 to 6 week intervals in the shielded or viteline method described by Brown.[11]

It is most important to emphasize here that the history of the patient was considered first, in addition to skin test sensitivity, before therapy was instituted. Each patient was checked either during or after the season to evaluate the results of the emulsion treatment. The youngest patient was 4 years old, the oldest 67. There was one pregnant woman in this group. Therapy was started during the first trimester. Both grass and ragweed emulsion were given with good results. She delivered a normal child without any complications.

The results of therapy are listed in Table 1. Eighty-four percent of the tree pollen patients had good relief, while 78% of the ragweed and 74% of the grass pollen patients were practically symptom free during their respective seasons, for an overall total of 78%.

Reactions

There were 41 reactions encountered among the 261 patients. Of these, 27 were local reactions and consisted of itching at the site of injection often accompanied by slight swelling. These symptoms developed about 24 hours after the injection and persisted from 1 to 14 days. These were controlled by anti-histamines, although a majority of the patients in this group took no medication at all and usually ignored the reaction.

There were 12 systemic reactions listed in Table 2. These were all delayed in type, the earliest developing 6 hours after the emulsion injection. The longest symptom was urticaria in one patient, which persisted for a period of 6 weeks. There were 2 patients who developed an abscess at the site of injection. These are listed below.

Case 1. This 7 year old female child had a 3 year history of ragweed hay fever and asthma. Scratch test revealed 3+ reaction to ragweed. There were no extra seasonal symptoms. On April 23, 1962, the patient was given a ragweed emulsion of 200 units in her left arm. One week later, her arm began to swell and became quite tender and painful over the injected site when she moved this extremity. She developed a hacking cough and her temperature fluctuated between 99 and 102. Fourteen days after the injection, the site became fluctuant and was incised under local anesthesia. About 300 cc of brown-yellow purulent material was drained from the area. The abscess healed well at the end of a 3 week period. No antibiotics were given. A culture report from the Bacteriology Department of the Maine Medical Center revealed Staph. aureus coagulase positive. No further injections were given for the remainder of the season. The mother reported in the fall that the child had a good pollen season.

Case 2. This 65 year old male patient had a 30-year-old history of hay fever and asthma due to grass and ragweed sensitivity. He took perennial desensitization from 1945 to 1951 with very little relief of his symptoms. In 1951, he resorted to the use of cortisone which he took in doses of 75 to 100 mg. daily during the pollen season only. Occasionally, he required the use of adrenalin®, even during these periods. Each year for the next 10 years, he took the steroid hormones during the pollen season. This therapy controlled most of his symptoms until 1961 when he suffered his worst attacks of asthma in July and August and decided to return for emulsion therapy in 1962. On April 21, 1962, the patient was given a primer dose of 500 units of ragweed emulsion in his left arm. Two weeks later, he developed pain, tenderness, and swelling over the injected site. There was no history of any injury to the site. There was no associated fever, nor any wheezing. On May 24, the indurated area became fluctuant. Under local anes-

TABLE II

No. patients	*Age*	*Protein Nitrogen Units of Emulsion*	*Systemic Reactions*	*Seasonal results*
1.	31	grass 500	Moderate swelling and soreness. Wheezing developed in 4 days and persisted for 10 days.	no improvement
2.	41	(a) grass 2500	Itching and swelling with generalized hives 2 days after injection lasting 3 weeks.	no improvement
		(b) ragweed 2500	Hematoma at site, wheezing 1 week, nodule persisting for 9 months.	
3.	10	ragweed 500	Headache and chills 6 hours after injection subsequent hayfever for 1 week.	good
4.	67	(a) grass 200	Wheezing 24 hours after injection lasting 1 day.	good
		(b) grass 500	Achy and nausea for 2 days.	
		(c) ragweed 5000	Wheezing 8 hours after injection lasting 1 week.	
5.	36	ragweed 7500	Marked local swelling and moderate malaise for 4 days.	no improvement
6.	30	grass 500	Intense headache 2 weeks after injection lasting for 3 days.	good
7.	10	grass 2500	Headache, sneezing, malaise and fever (102) 1 day after injection lasting 4 days.	good
8.	45	ragweed 5000	Generalized hives 2 days after injection persisting for 6 weeks.	good
9.	11	grass 1000	Marked lassitude 24 hours after injection lasting 2 days.	good

thesia, the abscess was incised and drained 50 cc of yellowish-gray material. A culture report of the Bacteriology Department of the Mercy Hospital revealed Staph. aureus coagulase positive. No antibiotics were given and the abscess healed without any complications in one week. On June 10, 1962, the patient received another ragweed emulsion of 1,000 units in the right arm, and 5,000 units of ragweed emulsion in the same arm on July 7, 1962. He required adrenalin on 2 occasions only during the ragweed season. The patient admitted that he experienced one of his best seasons in years. It is interesting to note that 15 other patients were given emulsion material from the same source as the above 2 patients without any side-effects encountered.

Summary

A group of 261 patients suffering from one of the three major classes of pollens (trees, grasses and ragweed) was treated by means of injections of the emulsified extract of the specific antigen to which they showed sensitivity. Included were 126 Ragweed, 97 Grass, and 38 Tree pollen patients whose overall good results were 78%.

There were a total of 660 injections administered to the 261 patients in this study. There were 27 local reactions (4.0%) with minor symptoms of itching and slight swelling. Fourteen (2.0%) systemic reactions occurred in 11 patients including 2 who developed an abscess at the site of the injection. The cause of the abscesses could not be determined; but local trauma, metal particles, and bacterial contamination have been reported as a source of this complication. No evidence of carcinogenesis has been reported in the literature.

Patient acceptance for this new method of therapy was good. It was convenient, resulting in fewer visits and comparable to aqueous conventional therapy. It offers to the most sensitive patient a method of treatment which is effective and time-saving. Newer emulsion materials soon will minimize some of the present reactions. In the not too distant future, repository therapy should replace the conventional form of treatment.

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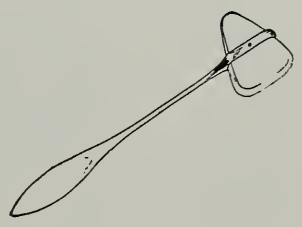
296 Congress Street, Portland, Maine



DEAN H. FISHER. M.D.
COMMISSIONER

State Of Maine

Department of Health and Welfare

Swimmer's Itch

M. C. DUNHAM, M.D.*

For the past several summers we have investigated and confirmed outbreaks of "swimmer's itch" in widely scattered swimming areas of the State and have no reason to doubt its scattered existence throughout Maine.

This itching malady is primarily annoying. It is usually without serious import, but deserves attention nevertheless because of its significance as a medical problem in a recreational State.

The itching rash, appearing soon after swimming, is due to the presence in the water of the cercarial stage of a schistosome related to organisms causing schistosomiasis. However swimmer's itch has no such harmful potential.

The schistosome of swimmer's itch, like its more deadly cousins, passes a part of its life cycle in certain species of fresh water snails and it is this larval phase of the organism which does the damage to swimmers.

This larval schistosome, a cercaria, is about 150-200 microns in length and resembles in shape a tadpole with a forked tail.

Upon release from its intermediate snail host into water, it starts swimming actively in search of a host, usually a rodent or bird. It can mistake a human swimmer for its host and when this happens the schistosome penetrates the human skin. It accomplishes this by forcing its head into the skin through pressure with its tail against the surface film of water present on the bather's body.

Since man is not its definitive host and it cannot adapt to human internal body chemistry, the cercaria dies soon after penetration and usually no damage occurs except for a localized, erythematous reaction at the site of entry of each schistosome. This reaction to a foreign body, when it occurs in countless numbers on the bather's body, results in the papular rash of swimmer's itch.

The reaction is a temporary one, best treated symptomatically as any acute itch with cooling preparations. It is to be noted that occasionally a person may become sensitized by repeated exposure and develop a more severe systemic reaction.

The penetration can be prevented by removing the surface film of water necessary for the organism to use for leverage to enter the skin. This can be achieved by drying the body briskly with a towel immediately upon emerging from the water, before the organism starts to penetrate. Without this film the cercaria is helpless and soon dies of dehydration.

Since this condition has some economic import to a community which may value its swimming areas as recreational attractions, it may be necessary to take stronger control measures. For this a summary of certain features of the life cycle of the schistosome may be of some significance.

This schistosome, a trematode, is a parasite of rodents and bird, including water fowl. Adult worms, inhabiting larger blood vessels of these hosts, release eggs which leave the host eventually in urine or feces.

These eggs, when they reach water, develop into free swimming larval forms called miricidia, which seek out a suitable fresh water snail as an intermediate host. In the snail's body they undergo further maturation and become cercaria, another free swimming larval form. These cercaria are released by their host snails in swarms or bursts at definite times of the day, the time varying with the locality. These are the forms which, in their search for their definitive bird or rodent host may accidently encounter man and consequently cause the rash.

If one can determine the time of day, or night, at which the snails release their cercaria in a particular area then swimmers can avoid this particular time and thus avoid the rash as the cercaria are relatively short lived.

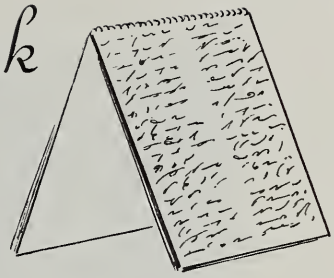
Swimmer's itch tends to occur most commonly at times when water levels are low, in the heat and dryness of August, although it is not limited to this time. Presumably the factors of water temperature and of increased concentration of schistosomes in low water are partly responsible for this seasonal aspect.

Confirmation of the presence of the larval schistosomes is relatively easy. It is necessary merely to collect in several ordinary clear glass jars containing pond water a number of snails, which are present in most Maine fresh water areas. If diligent search fails to reveal any snails, then the presence of schistosomes can be questioned. Within a few minutes to a few hours the snails will release cercaria and one can usually see in the jars myriads of rapidly moving dots. A drop of this water containing these organisms is then viewed under a low power microscope. It is usually possible with some

Continued on Page 187

*District Health Officer, P.O. Address, Presque Isle, Maine.

From the Secretary's Notebook



110th Annual Session of the Maine Medical Association

House of Delegates

The 110th annual session of the House of Delegates of the Maine Medical Association was held on Sunday, June 23, 1963 at Rockland, Maine with fifty-two members present. The first meeting was called to order at 9:30 A.M. by the President-elect, Ernest W. Stein, M.D. of Pittsfield who turned the meeting over to the Speaker of the House, Linus J. Stitham, M.D. of Dover-Foxcroft. The meeting adjourned at 12:30 P.M. until 2:30 P.M. with final adjournment at 4:30 P.M.

Election of Speaker and Vice-Speaker

Linus J. Stitham, M.D. was re-elected Speaker of the House of Delegates and Robinson L. Bidwell, M.D. of Portland re-elected Vice-Speaker of the House.

Amendments to the Constitution and By-Laws of the M.M.A.

The following recommended amendments to the Constitution and By-Laws as proposed by the Piscataquis County Medical Society were approved:

Constitution, Article VIII, "The officers of this Association shall be a President, a President-Elect, a Secretary-Treasurer (if a member of the Association), and a Councilor from each Councilor District."

PROPOSED AMENDMENT: Insert the word "Speaker" after "(if a member of the Association)."

By-Laws, Chapter III, Duties of the House of Delegates (page 9), Section 4. — "From among the members of the House of Delegates, the President-Elect, for the purpose of expediting proceedings, shall appoint reference committees to which reports and resolutions shall be referred."

PROPOSED AMENDMENT: Change the word "President-Elect" to read "Speaker of the House."

(These proposed amendments were presented at the Interim Meeting of the House of Delegates, published in the May issue of the Journal, and copy sent to each member of the House with summary of the Interim Meeting.)

Reference Committees

The following Reference Committees were appointed by the President-elect, Dr. Stein.

Reference Committee No. 1 — Carl E. Richards, M.D., Alfred, Chairman; Lloyd Brown, M.D., Bangor and James A. MacDougall, M.D., Rumford.

Reference Committee No. 2 — Martyn A. Vickers, M.D., Bangor, Chairman; Raymond G. Giberson, M.D., Presque Isle and David K. Lovely, M.D., Portland.

Reference Committee No. 3 — Norman E. Cobb, M.D., Belfast, Chairman; Russell G. Williamson, M.D., Blue Hill and Isaac Nelson, M.D., Greenville.

The Budget

Charles W. Eastman, M.D. of Livermore Falls, Chairman of the Budget Committee, reviewed the proposed budget for fiscal year 1964 as approved by the Council and presented at the Interim Meeting of the House of Delegates. On motion by Clyde I. Swett, M.D. of Island Falls, the budget was approved.

Estimated income from January 1, 1964 to December 31, 1964 from State Dues, Journal Advertising, Subscriptions, Exhibit Space Rentals and miscellaneous is $65,950.00.

Approved expenditures total $73,550.00 as itemized below:

Association	
Office	
Salaries:	
Executive Director	$11,000.00
Secretary-Treasurer	3,500.00
Stenographers	6,800.00
Travel — Exec. Dir. & Sec.-Treas.	1,200.00
Supplies, tel., rent, Payroll taxes	5,500.00
Equipment	500.00
General:	
President's Expenses	1,000.00

Annual Session & Interim	
Meeting House of Delegates	5,000.00
Council	300.00
Committees:	
Medical Advisory (Legal Counsel)	1,000.00
Legislative Counsel	—
Standing & Special	1,500.00
Delegates:	
American Medical Assn.	1,200.00
N. E. & New Brunswick	400.00
New England Council Dues	150.00
Fall Clinical Session	500.00
Annual Rosters	300.00
Woman's Auxiliary	400.00
Journal:	
Printing & Plates	20,000.00
Office	
Salaries:	
Editor	2,500.00
Secretary-Treasurer	3,000.00
Stenographer	3,500.00
Supplies, postage, rent	
Payroll taxes	1,800.00
Insurance	100.00
Retirement Fund	2,400.00
Totals:	$73,550.00

Election of Councilors

Paul S. Hill, Jr., M.D. of Saco was elected Councilor for the First District which includes the Cumberland and York County Medical Societies and Charles F. Branch, M.D. of Lewiston, Councilor for the Second District, including Androscoggin, Franklin and Oxford Counties.

Annual Reports

Annual reports were submitted prior to the meeting by the following Councilors and Committee Chairmen and included with the Order of Business in the House of Delegates folder:

Thomas A. Martin, M.D., Councilor and Council Chairman and Councilors, Charles W. Eastman, M.D., John F. Dougherty, M.D. and George E. Sullivan, M.D.

Standing Committees: Legislative, Brinton T. Darlington, M.D.; Recruitment, Aid and Placement, Paul H. Pfeiffer, M.D.; Medical Advisory, Thomas A. Martin, M.D.; Public Relations, Donald F. Marshall, M.D.; Rural Health, Isaac Nelson, M.D.; Board of Ethics and Discipline, William F. Mahaney, M.D.; Health Insurance, Francis A. Winchenbach, M.D.

Dr. Hill

Special Committees: Diabetes, Melvin Bacon, M.D.; Maternal and Child Welfare, Alice A. S. Whittier, M.D.; Mental Health, Guy N. Turcotte, M.D.; American Medical Association Education & Research Foundation, Robert W. Agan, M.D.; Conservation of Vision, Dexter J. Clough, 2nd, M.D.; Disaster Medical Care, Charles W. Steele, M.D.; Liaison Activities between the Maine State Nurses' Association and the M.M.A., George O. Chase, M.D.; Problems of Long-Term Patient Care, Peter W. Bowman, M.D.

Reports were presented at the meeting by the Executive Director, Daniel F. Hanley, M.D., the Secretary-Treasurer, Esther M. Kennard, the Chairman of the Advisory Committee to Secretary of State and Bureau of Motor Vehicles, George L. Maltby, M.D. Clyde I. Swett, M.D. presented his report as Councilor for the Fifth District, as well as a report on the Medic-Alert Program and the Committee on Medicine and Religion. Raymond E. Weymouth, M.D. of Bar Harbor, Councilor for the Sixth District, was ill and unable to be present.

Supplemental reports were presented by Drs. Winchenbach, Pfeiffer, Bowman and Clough.

Committee reports not submitted prior to the meeting will be sent to the members of the House of Delegates and pertinent items included with this report of the Stenographic Record.

To be continued

Maine Heart Association Notes

Assessment Of Functional Recovery Of Men Surviving First Myocardial Infarction

"In 1940, the New York Central Railroad Medical Department adopted a policy of returning operating personnel to full-time work after myocardial infarction if examination . . . indicated a good functional recovery. This report is concerned with the fate of 348 men who applied for return to service after initial infarction, and some clinical observations influencing the prognosis.

". . . 292 returned to work; and five years after initial infarction, 82% were living, 25% had sustained a second clinical infarction, and 10% were living but medically disabled. One hundred and forty-six men who returned to work were followed ten years or more. Ten years after initial infarction, 58% were living, 45% had a second infarction and 10%, although living, were medically disabled. Recurrent myocardial infarction was the major cause of death, and disability was largely due to angina or recurrent infarction.

"Measurable cardiac enlargement attributable to congestive heart failure which complicated the first infarction was the most adverse, single prognostic sign in this series. Hypertension, particularly when accompanied by cardiomegaly, severe and persistent angina, and a fixed electrocardiographic pattern of acute infarction, sometimes associated with a ventricular aneurysm, significantly shortened the prospects for a long survival. Age was of little importance in this study, . . . The electrocardiographic exercise test, . . . was not a prognostic guide in this group. Men whose electrocardiograms returned to normal, although not free of recurrent infarctions, had the best long-term outlook." (Dimond, G. E. American Heart Journal, Volume 65, pages 832-838, 1963.)

World Report On Heart And Circulatory Diseases Available

The report is a condensation of papers presented at the 35th Annual Scientific Sessions of the American Heart Association held in Cleveland in October 1962. It includes first-hand reports of cardiovascular problems by distinguished physicians and scientists from seven countries: Sweden. Mexico, Soviet Union, Nigeria, India, England and the United States. The individual reports cover the special problems posed in each country by the cardiovascular diseases, recent advances towards solving these problems, and suggestions for cooperation between nations in a world effort to reduce death and disability from cardiovascular diseases.

A copy of the condensation may be obtained, free of charge, by writing the Maine Heart Association, 116 State Street, Augusta, Maine.

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Secretary, Donald L. Anderson, M.D., Lewiston

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Secretary, C. W. Kinghorn, M.D., Kittery

News, Notes and Announcements

15th Annual Pediatric Institute for General Practitioners

The 15th Annual Pediatric Institute will be held at the Maine Medical Center in Portland, Maine on Friday, September 13. A panel presentation on *Maternal Care* will be conducted in the morning and a panel presentation on *Perinatal Mortality* at the afternoon session.

The one day session is under the sponsorship of the Division of Maternal and Child Health, Department of Health and Welfare and is endorsed by the Maine Medical Association and by the Maine Chapter of the American Academy of Pediatrics.

The final detailed program will reach all Maine physicians at the end of August.

Department of Health and Welfare Division of Maternal and Child Health Including Services for Crippled Children

(by Appointment Only)

Orthopedic Clinics

Augusta–Augusta General Hospital
1:00 p.m.: Aug. 22
Bangor–Eastern Maine General Hospital
9:00 a.m. and 1:00 p.m.: Sept. 26
Fort Kent–Peoples Benevolent Hospital
10:00 a.m.: Sept. 11
Lewiston–Central Maine General Hospital
9:00 a.m.: Sept. 20
Portland–Maine Medical Center
9:00 a.m.: Sept. 9
Presque Isle–Arthur R. Gould Memorial Hospital
9:00 a.m. and 12:30 p.m.: Sept. 10
Rumford–Community Hospital
1:30 p.m.: Sept. 18

Cardiac Clinics

Bangor–Eastern Maine General Hospital
9:00 a.m.: Aug. 23, Sept. 13, 27
Portland–Maine Medical Center
9:00 a.m.: Every Friday (holidays excepted)

Pediatric Clinics

Bangor–Eastern Maine General Hospital
1:30 p.m.: Aug. 23, Sept. 27
Presque Isle–Arthur R. Gould Memorial Hospital
1:30 p.m.: Sept. 25
Waterville–Thayer Hospital
1:30 p.m.: Sept. 3

Clinics for Mentally Retarded Preschool Children

Waterville–Thayer Hospital
9:00 a.m.: Aug. 21, Sept. 4, 18

Adolescent Clinics

Portland–Maine Medical Center
1:00 p.m.: Aug. 28, Sept. 25

Cystic Fibrosis Clinics

(In conjunction with the Maine Medical Center, Portland)
Portland–Maine Medical Center
9:00 a.m.: Aug. 20, Sept. 17, 18
(In conjunction with the Central Maine General Hospital, Lewiston)
Lewiston–Central Maine General Hospital
9:00 a.m.: Sept. 6

1963 Scientific Session

A Conference on *Unusual Forms and Aspects of Cancer in Man,* American Cancer Society, Biltmore Hotel, New York City, New York, October 21-22, 1963.

Interstate Offers Varied Program for GP's

The 48th Annual Scientific Assembly of Interstate Postgraduate Medical Association, to be held at the Palmer House, Chicago, October 21-24, offers 19 and ¾ hours of varied teaching (and A.A.G.P. Category II credit) for a registration fee of $10. The program is especially suited to the needs of generalists, as all lectures, panels and clinics are closely related to medical problems familiar to the physician who does not devote his time to a single specialty. Panels on *Neck, Shoulder and Arm Pain, Fractures and Dislocations in Children* and *The Pros and Cons in the Use of Anticoagulants* are important parts of the three and one-half day program.

Interstate is not a "membership organization," but offers an annual teaching program for practitioners interested in a varied review of new developments in the major branches of medicine. The 1963 Assembly program offers educational exposure to more than 50 prominent medical educators, as teachers.

Those interested in full details of the program are urged to write for a brochure, by addressing a postal to N. A. Hill, M.D., Secretary, Interstate Postgraduate Medical Association, Box 1109, Madison 1, Wisconsin.

New England Postgraduate Assembly November 13, 14 and 15, 1963

The New England Postgraduate Assembly will be held at the Statler Hilton in Boston, Massachusetts on November 13, 14 and 15, 1963.

Subjects of interest for the three day session will include:

Wednesday — *Diabetes, Fluid and Electrolytes, Diuretics, Obstetrical Problems, Dangers of Drugs, Practical Office Psychotherapy* and *Breast Cancer.*

Thursday — *Cerebrovascular Disease, Strokes: Big and Little, Physical Fitness and Athletic Injuries, Hepatic Coma, Common Eye Problems, Nasal Injuries, Genetics* and *Clinicopathological Conference.*

Friday — *Adrenal Steroids, Obscure Fevers, Cardiac and Respiratory Resuscitation, Chronic Bronchitis and Pulmonary Emphysema, Emergency Treatment of Burns, Hearing Problems, Chronic Pain, Intractable Angina* and *Gynecologic Endocrinology.*

Ninth Congress of the Pan-Pacific Surgical Association and First Pan-Pacific Mobile Educational Lecture Seminar

All physicians are cordially invited to attend the Ninth Congress of the Pan-Pacific Surgical Association to be held on November 5-13, 1963 in Honolulu, Hawaii and the First Pan-Pacific Mobile Educational Lecture Seminar to be held on November 13-December 10, 1963 in New Zealand, Australia, Thailand, the Philippines, Hong Kong and Japan.

The Ninth Congress offers an extensive scientific program of 300 leading surgeons in nine surgical specialties.

The Seminar through the Pacific area offers, for the first time, scientific meetings in each country presenting medical material unique to the areas.

For further information, please write Dr. F. J. Pinkerton, Director General, Pan-Pacific Surgical Association, Suite 236, Alexander Young Building, Honolulu 13, Hawaii.

Chest Physicians Announce Meetings

The American College of Chest Physicians has announced the following schedule of forthcoming national and international meetings and postgraduate courses:

National and International Meetings

Interim Clinical Meeting, American College of Chest Physicians
Portland, Oregon, November 30, December 1, 1963

8th International Congress on Diseases of the Chest
American College of Chest Physicians
Mexico City, October 11-15, 1964

Postgraduate Courses

Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs
Washington, D. C., October 14-18, 1963

Clinical Cardiopulmonary Physiology
Chicago, October 21-25, 1963

Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs
New York City, November 11-15, 1963

Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs
Los Angeles, December 2-6, 1963

Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs
Miami Beach, January 13-17, 1964

Complete details of all meetings and postgraduate courses may be obtained by writing Mr. Murray Kornfeld, Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

Fiske Essay on Enzyme Chemistry

The Trustees of America's oldest medical essay competition, the Caleb Fiske Prize of the Rhode Island Medical Society, announce as the subject for this year's dissertation *Clinical Appli-*

cation of Newer Discoveries in Enzyme Chemistry. The dissertation must be typewritten, doubled spaced, and should not exceed 10,000 words. A cash prize of $500 is offered. Essays must be submitted by December 11, 1963.

For complete information regarding the regulations write to the Secretary, Caleb Fiske Fund, Rhode Island Medical Society, 106 Francis Street, Providence 3, Rhode Island.

Chest Physicians Plan Congress in Mexico City

The Eighth International Congress on Diseases of the Chest, sponsored by the Council on International Affairs of the American College of Chest Physicians, will be held in Mexico City, October 11 through 15, 1964.

The congress will be presented with the cooperation of the Mexican Chapter of the College and under the patronage of the Government of Mexico. It will be held in the Congress Building at the new Medical Center in Mexico City.

The congress will open on Sunday, October 11 and the scientific program will commence on Monday, October 12, and will include formal papers, panel discussions, motion pictures, and scientific and technical exhibits.

Fireside Conferences will be presented on Monday evening. The scientific program will continue to Thursday noon, October 15. A banquet and dance will be held on Wednesday, October 14.

Additional information may be obtained by writing Mr. Murray Kornfeld, Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

Fifth National Cancer Conference

Sponsored by the American Cancer Society, Inc., and the National Cancer Institute. Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, September 17, 18 and 19, 1964. For further information write: Coordinator, Fifth National Cancer Conference, American Cancer Society, Inc., 521 West 57th Street, New York 19, New York.

DEPARTMENT OF HEALTH AND WELFARE — *Continued from Page* 180

patience to catch up with the busy creatures and see clearly the cercaria.

The most effective method, of long range control, especially from a community standpoint, consists of interrupting the schistosome's life cycle by eliminating its snail host with chemical preparations. This can be accomplished without too much difficulty. Information and details of this procedure are available on request from the Division of Sanitary Engineering, Department of Health and Welfare, State House, Augusta.

Supervisor — Operating Room

Must be R.N. and experienced in operating room procedures. Salary commensurate with experience and ability. Liberal personnel policies. 55 bed General Hospital. JCAH; College town 25,000, Coastal Maine. Contact: Director Nursing Service, Regional Memorial Hospital, Brunswick, Maine.

The Journal
of the
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Volume Fifty-Four | Brunswick, Maine, September, 1963 | No. 9

President's Address*

Ralph C. Stuart, M.D.

This changing world of medicine, with its scientific advances, mostly requiring special laboratory tests, x-ray assistance, and various other aids: – such as, electrocardiograms, specialty tests, and others too numerous to mention, has caught the physician off guard. Unless by chance he is willing to continue with the old methods, and with a few pills and moral suasion, and dull conscience, he finds that he cannot any longer play the role of the *Kindly Family Doctor.*

This switch to the scientific, has placed him in a new character part, playing a role entirely different from that expected of him as a kindly, moderate, complacent family doctor.

The availability of these aforementioned services, of necessity, must divorce him from being the *sole contact with his patients,* and hereby is lost a good deal of his singular personal charm, since heretofore he was the single complete contact, diagnostician, and advisor, whose knowledge was *complete,* almost, the *compleati angler,* so to speak.

The public has not advanced with the times. They interpret this program as indifference, even to the point of picturing the doctor, in his new role, as cold unsympathetic, and too methodical.

This progress, and the need of either clinic, or hospital services has caused a reluctance on the part of any young doctor to settle too far from these services.

Hence the gravitation, of so many physicians to the cities, and the failure of young physicians to settle in small rural communities, such as exist in our State of Maine. They feel they cannot give satisfactory services any longer, without these scientific aids. It appears that it is not the scarcity of doctors, but the scarcity of wide spread diagnostic facilities, which is the problem in this large state.

The rising cost of a medical education makes it necessary for the doctor to earn more, by seeing more patients, and to be able to quickly determine the course of treatment. This necessitates that slow processes of diagnoses must be abandoned, and the need of seeing more patients to equally distribute his time and services, calls for an end to the old, slow, time consuming procedures.

To make this transition without comment, ire, and with appearing the less sympathetic, the public itself must become more acutely cognizant of these changing times and then perhaps a different picture of the *new doctor of this day* will be understood.

Therefore, I would advise that an educational program be devised, whereby through *articles written to news channels,* (*T.V.* for instance, and *newspapers,* be instituted by this *Association,*) so that a better understanding of our position be realized, and a better feeling be created in doctor-patient relations.

Through ignorance and misunderstanding, these relations have rapidly deteriorated. We have been too reluctant in this matter, besides, this angle is only *one phase.* The cause of the rising cost of *medical care* has *never yet* been fully explained to the public. Consequently, we find ourselves being on the receiving end of their criticism. The rising cost of labor in hospitals has necessitated the per diem cost per bed to sky rocket.

The rising cost of expert research and material has caused the cost of producing the heretofor penny tablet to assume a new price of 5 - 10 - yes even 30c. The 75c prescription is now $2 - $3 - yes $12. These are un-

(*Continued on Page 198*)

*Presented at the 1963 Annual Session of the M.M.A. House of Delegates.

Axillary Block — A Plea For Wider Use

Paul A. Brinkman, M.D.* and John R. Lincoln, M.D.**

The simplicity and relative safety of the axillary approach to the brachial plexus should encourage its more frequent use to produce anesthesia of the upper extremity. In 1922 Labat described the technic, which was modified by Accardo and Adriani in 1949.[1,2] With the introduction of new anesthetic agents the method's usefulness to anesthesiologists has greatly increased, and its benefits might well be further extended to the patients of all physicians who treat injuries of the hand and arm.

Advantages

It is accepted practice to avoid the dangers, discomforts, inconveniences, and expense of general anesthesia for any procedure which can be easily performed by using simple technics of local or regional anesthesia. This is particularly true in emergencies, which often add the hazards of the full stomach, fright, bleeding, and insufficient time for proper preparation. Especially in such circumstances, physicians who would commonly elect local infiltration anesthesia or such simple regional methods as digital block will find axillary block equally useful and effective, and nearly as easy to perform. When used for the treatment of simple fractures, this block avoids the dangers of compounding the fracture site with direct injection of local anesthetics.

Brachial plexus block by the supraclavicular route often includes anesthesia of the shoulder as well as the arm, but axillary block is much simpler and usually sufficient in extent. The axillary block also obviates any danger of producing pneumothorax or paralysis of the phrenic nerve. In the presence of acute or chronic pulmonary disease, or known or suspected injuries of the chest, axillary block is preferable to both supraclavicular brachial block and general anesthesia.

By bathing the sympathetic fibers which are carried to the arm and hand in the nerve trunks and around the blood vessels, brachial block by either route surpasses general anesthesia in protecting the injured extremity from reflex vascular spasm, with its resulting pain and edema.

Additional advantages of brachial plexus block by the axillary, rather than the supraclavicular, route are the easily identified landmarks, and compact fascial compartment which confines the injected solution to the nerve trunks in the axilla. This fascial compartment lies superficially and thus allows the use of a short fine-bore needle, which is more acceptable to patients of all ages and rarely produces a hematoma.

*Surgical Resident, Maine Medical Center, Portland, Maine
**Director of Anesthesiology, Maine Medical Center, Portland, Maine.

Disadvantages

Axillary block shares the disadvantages of most other forms of regional or local anesthesia. These include systemic toxicity of the anesthetic drug or vasoconstrictor due to rapid absorption, toxicity from intravascular injection, idiosyncrasy, and unsatisfactory relief of pain. Toxic reactions are extremely rare, if basic principles of technic are observed. Clayton[4] had one reaction with eighty blocks, manifested by slight twitching of the corner of the mouth and immediately relieved by the intravenous injection of a barbiturate. One of us (P.A.B.), as a junior house officer, performed over fifty axillary blocks with no serious untoward reactions and only one unsuccessful block. Because of the potential danger of systemic reactions, it is recommended that blocks employing anything but minute amounts of local anesthetic solution be performed where there is immediate access to resuscitative equipment and drugs, including equipment for the administration of oxygen by intermittent positive pressure.

Indications and Contraindications

Axillary blocks have been used effectively for the following procedures:

(1) reduction of fractures of the hand, forearm, and lower third of the humerus;
(2) repair of major soft tissue trauma, lacerations and severed tendons in the upper extremity;
(3) elective operations distal to the elbow;
(4) cardiac catheterizations in children;[7]
(5) blocking the sympathetic nerve supply to the arm.

The only absolute contraindication to axillary block is infection in the axilla. Neurological disease or injury of the nerves in the brachial plexus constitute relative contraindications to major regional anesthesia. In extreme youth most regional anesthetic technics are usually avoided; but axillary block has proven to be especially useful in children.[4,7] One author[8] reports its successful use in a child six weeks of age.

Anatomy

The anatomy of the arm is such that within the axilla the nerves supplying the hand, forearm, and much of the upper arm are enclosed in a compact fascial sheath with an easily-palpable artery, the axillary artery (Fig. 1). Two other landmarks, although not absolutely essential, help identify the best location for the injection. With the extremity abducted to 90° and externally rotated, the insertions of the tendons of the pectoralis major and the latissimus dorsi muscles are visualized.

The injection is performed where an imaginary line connecting these points of insertion crosses the axillary artery at right angles. The humerus forms a convenient "back stop" against which the fascial sheath and its contents can be moved or steadied. As seen in Fig. 1, the antebrachial cutaneous nerve, the median nerve, and the musculocutaneous nerve are anterior to the axillary artery, and the ulnar and radial nerves are posterior. The musculocutaneous nerve leaves the neurovascular compartment at or slightly proximal to the injection site, but is usually blocked as the solution spreads centrally. The radial nerve lies deep to the axillary artery. These two nerves are, therefore, the ones most likely to fail to be anesthetized if an insufficient volume of solution is injected, or if the injection is not made close posteriorly (below) the artery.

The neurovascular compartment at the site of injection is approximately 2-3 cm in diameter in an adult male. DeJong[6] reports that 7 ml of solution will fill the compartment for a segment 1 cm long, and 42 ml of fluid will fill the compartment for a distance of 6 cm. A cylinder of this length will completely bathe all the branches of the brachial plexus; therefore, the maximum recommended volume for a healthy adult male should not exceed 45 ml of fluid, but up to 50 ml have been used.

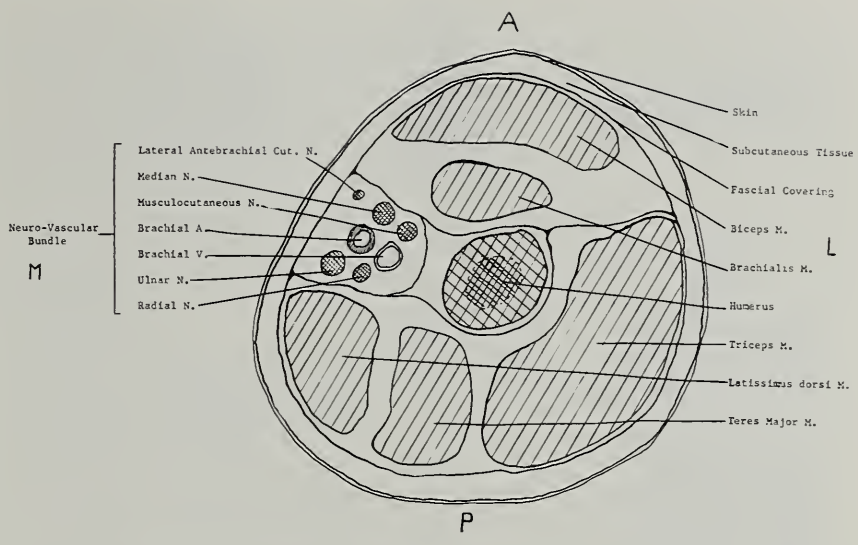

FIG. 1.

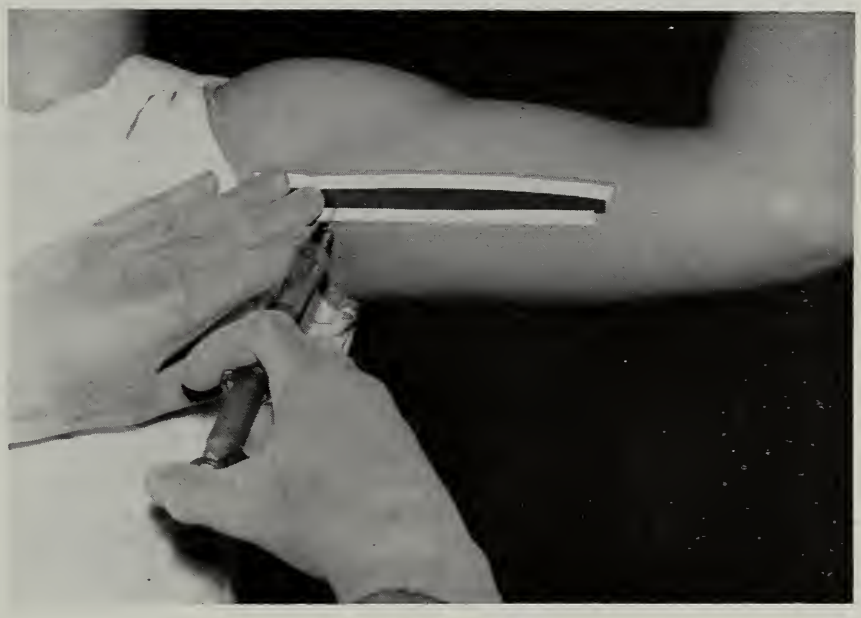

FIG. 2.

PROCEDURE

Premedication: With axillary block, the only discomforts to the patient are the initial insertion of the small bore needle and the raising of the skin wheal, and the peculiar sensations of paresthesias; therefore, the only premedication used when the block has been performed on out patients has been explanation and reassurance. An extra five minutes of reassurance, especially in children, has been found to be well worth while. Small[5] has found that pentobarbital sodium administered rectally may produce desirable sedation in children and at the same time may afford some protection against untoward reactions due to local anesthetic drugs. Conventional premedication should be used with the block if the procedure is of such a magnitude as to require the use of the hospital operating room or the use of a tourniquet.

Position: With the patient supine, the extremity to be anesthetized is abducted 90° to the body and the forearm flexed to form a right angle (Fig. 2). In this position the dorsum of the hand lies above the head against the table. The axillary artery and the insertion of the pectoralis major muscle are easily palpable.

Materials: The materials needed for this block are shown in Fig. 3, with the addition of sterile towels and gloves. The sterile cup, Zephiran, gauze and forceps are used for the surgical preparation of the arm. A ten ml Luer-Lok syringe and 25 gauge ¾ inch needle complete the necessary equipment. Lidocaine (Xylocaine®) hydrochloride, 1.5-2.0% solution is used by the authors. This agent is an aminoacyl amide introduced by Löfgren in 1946, is twice as potent as procaine, has essentially the same toxicity, and produces few untoward systemic reactions. Lidocaine® also diffuses more rapidly in tissues and spreads over a larger area than procaine. When

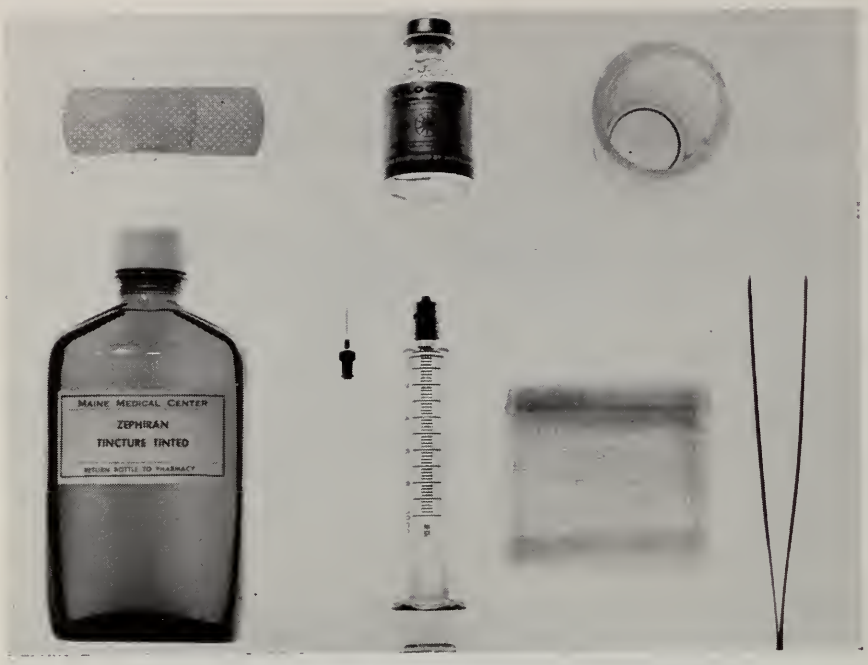

FIG. 3.

anesthesia in excess of 1-2 hours is required, epinephrine is added to produce a final concentration of 1/250,000 (0.2 ml of 1/1000 epinephrine dissolved in 50 ml of anesthetic solution).

Technique: Following positioning of the extremity as indicated above, the axilla is surgically prepared and draped. The axillary artery is palpated as high in the axilla as possible and then steadied against the humerus with two fingers of one hand. The syringe is filled with the anesthetic solution; and with the 25 gauge needle attached, a skin wheal is made in the desired location as seen in Fig. 2. The needle is then advanced perpendicular to the skin, aiming above (anterior) to just miss the artery. As the needle penetrates the fascial sheath, a distinct "snap" gives assurance that the neurovascular compartment has been entered. The needle with attached syringe is advanced slowly with repeated aspirations for blood. If no paresthesia is elicited the needle is advanced to impinge upon the humerus. Withdrawing the needle 2-3 mm will place its tip in the neurovascular compartment where aspiration for blood is again attempted. If no blood is aspirated, 5-10 ml of solution is injected at this point. Paresthesias may be obtained but are not necessary for a successful axillary block.[1,2] A paresthesia which extends to the finger tips indicates proximity of the needle to the median nerve, while one to the elbow indicates proximity to the musculocutaneous nerve. In either case, the needle's advance is stopped; and, after careful aspiration, 1-2 ml of solution is injected. Rapid onset of anesthesia usually takes place. The needle tip is then withdrawn to the skin. After the syringe is again filled with anesthetic solution, the needle is now directed below (posterior) and behind the artery. Again paresthesias to the 4th and 5th fingers or to the dorsum of the hand and thumb may be illicited, indicating proximity to the ulnar or radial nerves. With repeated aspirations, 5-10 ml of solution is injected in this area, and then the needle is withdrawn.

The total amount of solution required depends largely on the age and size of the patient and the presence or absence of paresthesias during the block. Usually no more than 20 ml of solution is necessary to achieve an effective block. As little as 1.5 ml was required for the infant of six weeks reported by Small. If paresthesias have not been obtained, as much as 50 ml may be needed in a healthy adult male. Onset of anesthesia is more rapid when paresthesias have been elicited, occurring usually within five minutes; however, a period of 20-25 minutes may elapse, before complete anesthesia develops. If, at that time, anesthesia is insufficient, an additional 5-10 ml of solution may be injected on each side of the artery.

Aspiration of blood may be disturbing but is no indication to discontinue the block and is positive proof that the needle has been advanced into the correct compartment. Slight withdrawal of the needle and redirection to the same depth, either slightly anteriorly or posteriorly, followed by repeated aspiration, will place the needle tip in the desired location.

When this block is used without epinephrine it will last 1½-2 hours. When epinephrine is added, surgical anesthesia lasts about 3 hours and there may be freedom from pain for as long as 6 hours.

If a tourniquet is required around the upper arm, an additional 5-6 ml of solution should be deposited deep to the skin wheal to block the intercostobrachial nerve to the inner upper aspect of the arm.

SUMMARY

Brachial plexus block by the axillary approach has been discussed and the anatomy and technique reviewed with the emphasis being placed on its simplicity and advantages. The procedure is essentially a perivascular infiltration of an anesthetic solution within a compact fascial compartment containing all the major nerves to the upper extremity. The high incidence of satisfactory results, virtual absence of complications, and ease of administration make axillary block an extremely useful procedure for the physician.

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1. Adriani, John, Nerve Block. Philadelphia, W. B. Saunders. 1954. pp. 118-120.
2. Burnham, Preston J., Regional Block of the Great Nerves of the Upper Arm. Anesthesiology. Vol. 19. 1958. pp. 281-284.
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(*Continued on Page 198*)

Protean Protein

PHILIP P. THOMPSON, JR., M.D.

INTRODUCTION

The development of new and relatively simple techniques for the separation of the plasma proteins has stimulated curiosity in the significance of these substances in health and disease. It is not yet known how important are the detectible protein variations which occur in chronic infection, autoimmune disease, and neoplasms. Research activities in this field are expanding rapidly to include genetics, hematology, endocrinology, immuno-therapy, and chemotherapy. However, the most interest lies in finding clues which may help unravel the mysteries of the "Diseases of Unknown Etiology" such as Rheumatoid Arthritis, Systemic Lupus Erythematosis, and a variety of autoimmune states.

PROTEIN CHARACTER

The plasma proteins are those which are found freely circulating in the blood stream. They compose a portion of the group of globular or functional proteins which are soluble in water. These globular proteins are enzymes, hormones, hemoglobin, as well as the plasma proteins. They may circulate free, be extracellular, or be intracellular.

They are to be contrasted with the other large group of proteins, the structural or fibrous proteins which are linear strands rather than globular. This group includes collagen, all fibrous tissue, bone, cartilage and other tissues whose function is that of structural support.

The physical and chemical characteristics of the proteins are closely related to function. They are complex agglomerates of amminoacids either alone or combined with sugars or fatty acids to form proteins, glucoproteins or lipoproteins respectively. They may combine with heme, iron, copper, thyroid hormone to make hemoglobin, transferrin ceruloplasmin, and thyroid bound globulin, to mention a few of the common ones. In this manner they assist in a specific function of the body.

The amino acids are joined end to end through a (-COO-) (-NH3+) (Fig. 1) linkage (carboxyl-amino) or peptide bond. This union occurs with the loss of a molecule of water resulting in CO-NH bond. For this reason they are called polypeptides when an infinite number of amino-acids join together. They may have molecular weights varying from 20,000 to more than a million. In addition to the end to end linkage which is common in the linear or structural protein, they have side to side linkage – such as disulfide bond (Fig. 2) between the amino acid molecules of cystine. There are also polar or hydrophilic bonds which are electrostatic attractions between ions and not a true linkage (Fig. 3). These bonds allow water to pass between them, making

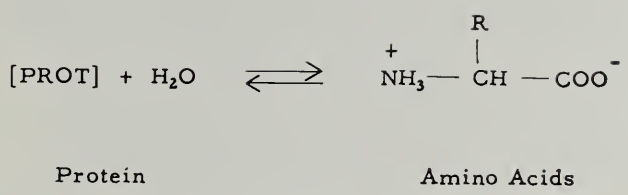

FIG. 1.

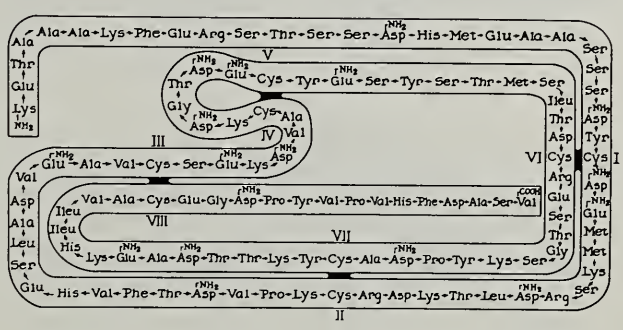

FIG. 2. The primary structure of bovine pancreatic ribonuclease. Abbreviations as in Figure 10. The four disulfide bonds arising from the presence of four residues of cystine in the molecule are represented by the black areas connecting the outlined chain. (From Spackman et al.[5])

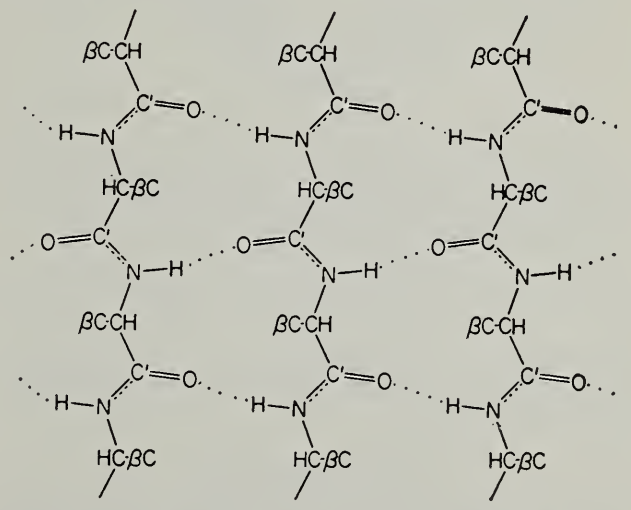

FIG. 3. Parallel polypeptide chains in β-structure. The hydrogen bonds are represented by the dots between the chains. (From Pauling and Corey.[8])

the proteins water soluble. The hydrophobic bonds on the other hand are firmer, do not involve oxygen and are chiefly those of hydrocarbons. This makes them generally more insoluble.[1]

These amino acid chains join in a variety of ways to form long fibrils, interwoven helices, pleated sheets, loosely globular masses etc. Structure and function closely correlate one with the other. (Figs. 4, 5). It should

FIG. 4. Proposed collagen structure of Rich and Crick. Only the asymmetric carbon atoms are shown for the amino acids in each peptide chain. The dashed lines are inserted to show that each segment along the compound helix is the same as the next. (From Doty.[3])

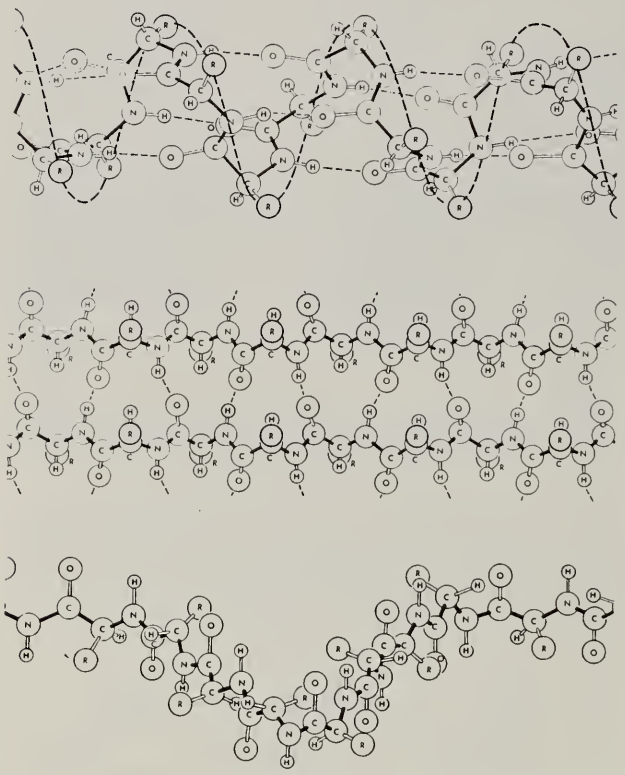

FIG. 5. Three conformations of the polypeptide chain. Top: the α-helix. Middle: two extended chains in the β-structure. Bottom: single chain in random coil form, with no stabilizing hydrogen bonds established. (From Doty.[3])

be noted that the globular protein molecule will not have a fixed structure but will vary with temperature, pH., electrolyte concentration, etc.[1] They have the morphology of a sponge, such as the hemoglobin molecule model (Fig. 6).

Protein Synthesis

The proteins are being continuously synthesized and degraded or broken down by the cells of the body. Those in the plasma are made chiefly by the liver and the reticuloendothelial system. Albumin, fibrinogen and haptoglobin are made in the liver while most of the globulins are synthesized by the reticuloendothelial system.[2,3]

The synthesis of albumin is begun about 1 hour after the feeding of tagged amino acids. It may not be complete for 30 days or more. Globulin synthesis proceeds at a slower rate beginning only after 60 hours and may not be complete for weeks or months.[2]

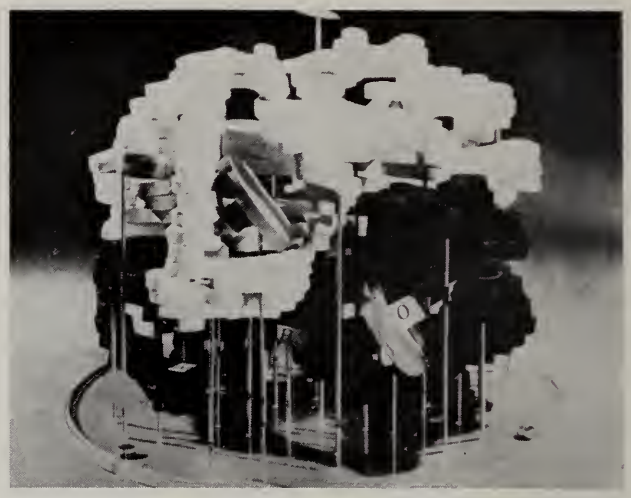

FIG. 6. Tertiary structure of horse hemoglobin at a resolution of 5.5 A. The heme groups are indicated by grey discs. The structure is viewed normal to *a*. The four polypeptide chains are visible; two identical "black" chains occupy most of the "lower" part of the structure, while two identical "white" chains compose most of the "upper" portion. (From Perutz.[22])

Function

Albumin has the physical property of maintaining oncrotic pressure and provides cell nourishment with its source of amino acids for cell regeneration and growth. Depletion of serum albumin is the principal stimulus for liver cells to synthesize more albumin.

Globulin on the other hand has its secondary function to protect the cells and maintain life and cellular integrity. It guards the cells against foreign proteins, toxic and noxious agents. Mechanisms of immunity and homograft rejection are related to the plasma and tissue globulins. The Thymus in the newborn is vital in the formation and function of the reticuloendothelial system, globulin synthesis, and immunity.

Plasma cells are the primary source of globulin. This is the so called 7S type or gamma globulin. The lymphocytes in the blood, in tissues and lymph nodes probably manufacture the 19S or heavier globulin.[4]

Malignant cells, either tissue or neoplastic reticuloendothelial cells may manufacture globulins. These may cause an excess of normal globulin or protein in hypergammaglobulinemia or paraproteinemia or abnormal forms of protein in dysproteinemia. These may be identified at times by the various techniques of separation of protein to be described.

Various disease states which usually result in an excess of normal or abnormal protein may also be associated with a relative or absolute deficiency of the same proteins usually gamma globulin.

Methods of Separation of Plasma Protein

Until 1930 it was possible to separate only two fractions of protein – albumin and globulin. This was done by differential precipitation with sodium sulfate. About 1930 Cohn separated seven different fractions by precipitation with alcohol at subzero temperatures.

In 1937 Tiselius discovered that plasma proteins could be separated by placing them in an electric field and noting the difference in migration rates. The rate of migration is dependent mostly upon the electrical charge of the molecule and to a lesser degree upon its size.

This process of separation is the basis for separation by paper electrophoresis and is perhaps the simplest of all techniques.

About 1950, Oudin and Ouchterlony devised a diffusion and precipitation technique in an agar gel medium for the identification of specific proteins. A precipitin arc or line is seen at the site of reaction of antigen antibody occurring in a thin film of agar or in an agar gel column. This visible precipitate develops as the antigen and antibody diffuse toward one another at the point of meeting.

In 1955 Grabar and Williams combined the two techniques of Tiselius and Ouchterlony. By this method, called immunoelectrophoresis it was possible to identify as many as 32 separate fractions of plasma protein. This technique is being used at the Maine Medical Center to study various sera.

The latest method of separation is called disc electrophoresis. It was developed in 1960 and is being used at the Medical Center and at Togus. It is also an electrophoretic method which utilizes a vertical column of polyacrylamide gel through which a salt solution buffer and plasma move as a current passes between the electrodes. These two processes of separation take about 40 minutes but requires additional time for staining and destaining. By the disc separation 20 to 30 "stacked discs" of individual proteins may be identified, and quantitated. Various types of hemoglobin, enzymes, lipoproteins and glycoprotein have been separated by this technique, using a variety of different stains. Probably many more biologically important molecules may be identified as specific stains are discovered.

The immunoelectrophoretic and disc separation have been utilized in conjunction with L. E. preps, Latex agglutination for rheumatoid factor (R.F.), florescent antibody study of the antinuclear factor in various collagen diseases.

The most recent refinement of protein separation is dependent upon a complicated system of sensitized red cell agglutinations in the presence of Rheumatoid Factor.[8] This demonstrates that specific gamma globulins are probably genetically controlled and vary much as do blood types. Seven different types of gamma globulin have been identified. These would all appear as a single gamma globulin in all of the above methods of protein separation. The types of gamma globulin thus identified are called Gm (a) Gm (b) Gm (x) etc.

Plasma Protein

The protein in the plasma is composed as mentioned above of amino acids, carbohydrates, and fat in varying proportions. The protein molecules may also transport or be bound with minerals or hormones. The group

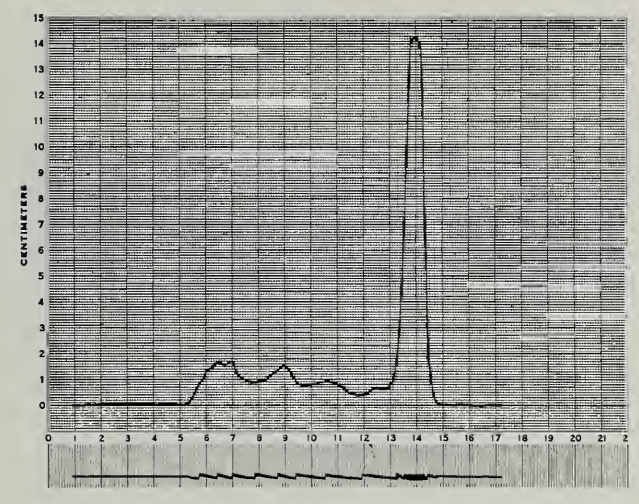

Fig. 7.

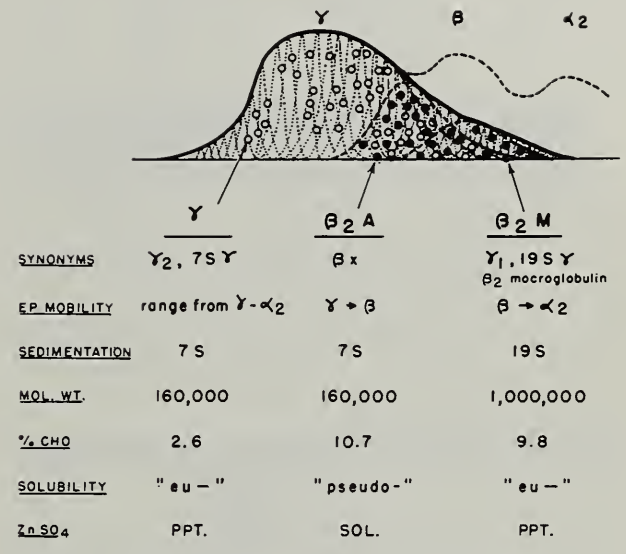

Fig. 8. Schematic presentation of the immunoglobulins of normal human serum (adapted from Heremans[1]).

The cathodal end of an electrophoretic pattern is diagrammatically shown to be comprised of the three major antibody-containing fractions, γ, β_2A, and β_2M.

to be discussed are largely amino acids. These are the proteins which are identified by paper electrophoresis. An analysis of these proteins is shown in (Fig. 7). As can be seen in the chart the peaks show from right to left: albumin, A1, A2, B1, B2, and gamma globulin. They appear to be rather specific but each peak probably represents an aggregate of protein molecules as shown in (Fig. 8). These labels apply to general regions of mobility of the particular protein molecule. Thus, peaks in the A1 region may be caused by one protein in one patient and a different protein in another.

The fact that many more identifiable proteins are crammed into the usual pattern of a paper electrophoresis can be seen by comparing it with the immunoelectrophortic photograph (Fig. 9) or the disc pattern (Fig. 10).

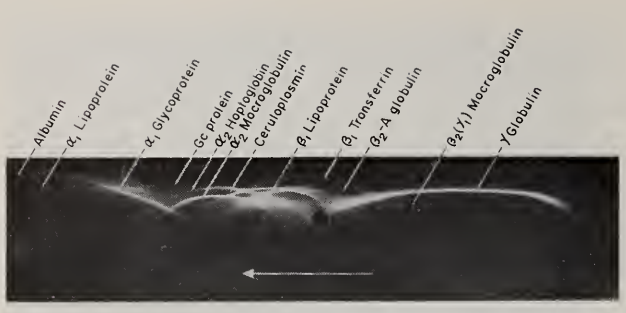

FIG. 9. Normal immunoelectrophoretic pattern of human serum developed with hyperimmune horse antiserum S-31. Relative quantities of human serum to antiserum were selected to provide optimum visibility of identifiable reaction lines.

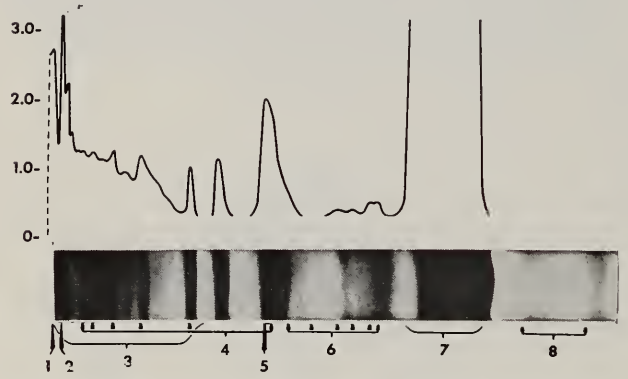

FIG. 10. Proteins of a three-microliter sample of human serum (haptoglobin type 2-1, no free hemoglobin or hemoglobin-haptoglobin complexes): (1) slow beta one lipoprotein; (2) slow alpha two macroglobulin; (3) region of "7S" gamma globulins; (4) haptoglobins; (5) transferrin; (6) post-albumins; (7) albumin; (8) pre-albumins. The "19S" gamma globulin and fibrinogen do not enter.

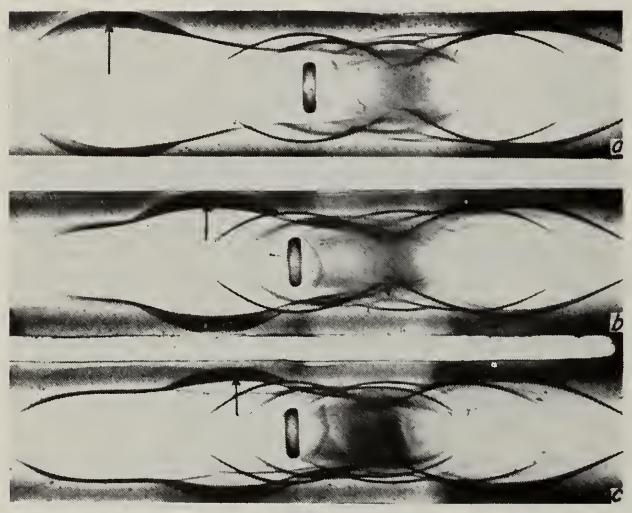

FIG. 11. Immunoelectrophoretic patterns of three gamma-type myeloma sera. The arc of the myeloma globulin in each pattern is indicated by an arrow: (*a*) the myeloma globulin occupies the cathodal end of the major gamma arc; (*b*) myeloma globulin in the midgamma region; (*c*) myeloma globulin in the anodal region of the major gamma arc. The complete fusion of the anodal and cathodal extremities of the respective myeloma proteins with the major gamma arc is evident.

IMMUNOGLOBULINS

The group of proteins which are related to immunity

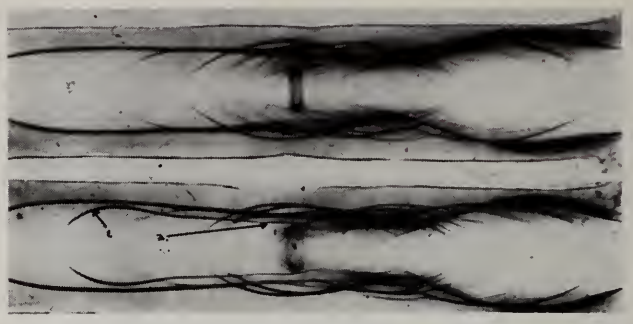

FIG. 12. Immunoelectrophoretic pattern of the serum in primary (Waldenström's) macroglobulinemia. A normal serum pattern (*above*) is shown for comparison. The paraprotein (*arrow* 1) occupies the cathodal end of the beta 2M arc. The long extension into the beta region (*arrow* 2) of the beta 2M arc may in part be due to "trailing."

are called immunoglobulins. They are composed of three identifiable protein molecules in normal sera. They appear as distinct arcs in the immunoelectrophoretic pattern (Fig. 8). They are the so-called 7S gamma, B_2M (19S gamma) and B_2A globulins. The "S" refers to Svedberg sedimentation constants as determined by the ultra centrifuge.

In disease states these immunoglobulins may be diminished or absent in aggamaglobulinemia. They may be present in excess as in macroglobulinemia or in multiple myeloma.

ABNORMAL PROTEIN PATTERNS

The synthesis of this group of protein is stimulated non-specifically by a variety of disorders. The following diseases may be associated with non-specific rise in globulins.

1. Many parasitic infections – especially tape worm.
2. Leishmaniasis – especially Kala Azar.
3. Granulomas – especially Sarcoid.
4. Viral and bacterial infections of a chronic nature.
5. Neoplasms – especially myeolomas and leukemias.
6. Collagen diseases – especially Rheumatoid Arthritis and Systemic Lupus Erythematosis.
7. Liver diseases – especially Lannaec's cirrhosis.

SPECIFIC IDENTIFIABLE PLASMA PROTEIN PATTERNS

There are a few diseases which have characteristic and specifically identifiable patterns with the above technique of protein separation. The paper electrophoresis is as accurate as the more refined techniques for identifying the rather specific pattern of Multiple Myeloma and Agammaglobulinemia. It is to be noted that the "myeloma protein" may show peaks anywhere between A1 to gamma range. It is characterized by a high single peak. Sixty percent of the myeloma patients have the peak in the gamma range (7S) (Fig. 11).

Waldenströms Macroglobulinemia has a characteristic pattern by the immunoelectrophoretic method (Fig. 12). This, however, may be present in leukemia.

Wilson's disease may be diagnosed by its characteristic

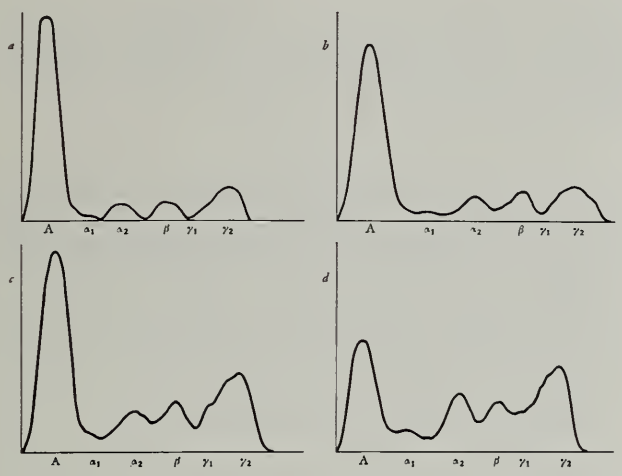

FIG. 13. (*a*) Normal. (*b*) Rheumatoid arthritis, grade 1 activity (mild), (*c*) Rheumatoid arthritis, grade 2 activity (marked). (*d*) Rheumatoid arthritis, grade 3 activity (severe).

immunoelectrophoretic pattern. This shows absent or markedly decreased amounts of ceruloplasmin.

At the present time the usefulness of these techniques for diagnosis of specific disease entities is limited to the four diseases mentioned.

NON SPECIFIC PLASMA PROTEIN PATTERN IN RHEUMATOLOGY

If the many other causes of alterations of the "protean proteins" are discounted, the variations seen in the "collagen" diseases will be discussed at greater length. It is known that Rheumatoid Arthritis and Systemic Lupus Erythematosis are associated with the greatest deviation from the norm. Similar non-specific patterns are at times seen in Scleroderma, Dermatomyositis, Polyarteritis, Amyloidosis, Sjögren's Syndrome etc. However, these latter diseases show protein abnormalities of lesser intensity.

The changes in the electrophoretic pattern of "R.A." and "S.L.E." are in general related to the severity of the disease and thus are of more prognostic than diagnostic value (Fig. 13). In general the elevation of the gamma globulins decrease with remission, natural or induced, by Corticosteroids or other drugs (Fig. 14). Sometimes in S.L.E. and R. A. as in leukemia there is a decreased amount of gamma globulin.

Specifically the increase in rheumatic disease varies most often of the B2M, gamma, A1 & A2 fractions (Fig. 13). It is possible that these nonspecific peaks may represent GM (a), GM (b) etc. with various mobilities.

It is postulated that Rheumatoid Factor (R.F.), which has been found in the sera of 90% or more of patients with Rheumatoid Arthritis, is an antibody to gamma globulin. The "R.F." has been identified by cellulose chromatography and found to consist of a 19S and a 22S component. They are called Factor 1 and Factor 2 respectively. These heavy globulin molecules probably

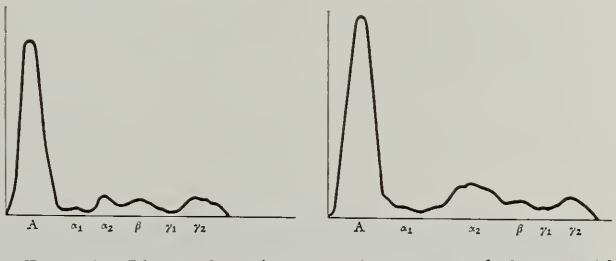

FIG. 14. Electrophoretic curves in 2 cases of rheumatoid arthritis with side effects of hormonal treatment: hypogammaglobulinaemia with persistent increase in α_2-globulins.

IMMUNOELECTROPHORESIS VALUES

of *n* 6030-antiserum Reaction to Rheumatoid Patients Gamma-globuline with sera of Rheumatoid Patients, L. E. Patients and Rheumatic Fever Patients.

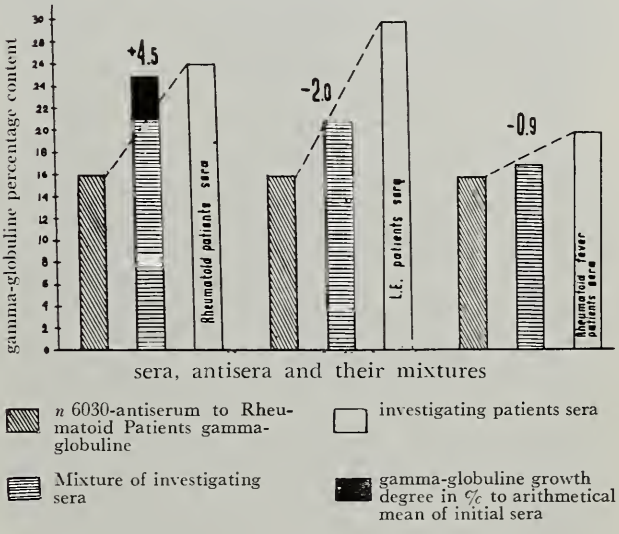

FIG. 15.

form complexes with 7S gamma globulin in the circulation.[9]

It is of further interest that these protein complexes have been split up by a variety of enzymes and chemicals. They may be broken down or degraded at a specific bond to yield fast or slow moving protein molecules, known as "F" or "S" fragments. By another lytic agent the molecules are broken down at their disulfide bond to form a light and heavy chain known as "L" and "H" chain. These fragments and chains are specific because of the presence or absence of specific antigenic determinants which render the antibody molecule specific for a given antigen.[9]

This information has been applied therapeutically in several ways such as:

1. The removal from the plasma of both antigen and antibodies by plasmaphoresis. This involves bleeding the patient and returning his own red cells.
2. The blocking of antigen-antibody formation by such chemicals as d-penicillinamine, methotrexate, and mercaptopurine.

Both of these methods of therapy have caused

definite clinical improvement in some of the collagen diseases, their variants, and other autoimmune diseases.[11]

Another practical application of this new knowledge of "Protean Protein" in rheumatology is a diagnostic one. Two Russian scientists reported the use of these separation techniques quantitatively. They were able to differentiate serologically Rheumatoid Arthritis, Rheumatic Fever, and Systemic Lupus Erythematosis.[10] They utilized three sera with paper electrophoretic separation. The first was the patient's serum, the second of a rabbit which had been immunized with the sera of a patient with one of these diseases and the third an equal mixture of both. If the mixed sera had a gamma globulin increment of greater than 4% compared with the patient's serum alone, the diagnosis was established (Fig. 15). This differential test has not been confirmed but may prove useful in specific circumstances.

Cancer Therapy

Of theoretical interest and perhaps of therapeutic value some recent work by de Carvallo of Cleveland is related to the study of "Protean Proteins." Horse serum containing antibody to the patients' tumor cells was given back to the patient in several doses over a period of weeks or months. The results appear to be encouraging, for remissions lasting up to 18 months have been reported. The demonstration of large amounts of tumor tissue antigen by the paper or immunoelectropheretic techniques might enable one to select the particular patient who would respond favorably to such therapy. This method of therapy has been used for both leukemia and adenocarcinoma.[12]

The knowledge gained by the use of the study of "Protean Proteins" and their separation and identification by methods described is expanding rapidly. Its application to various clinical problems as diagnostic and therapeutic tools will be more fruitful in the near future.

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PRESIDENT'S ADDRESS — *Continued from page* 189

avoidable additions to the cost of medical care. Whereas the primary fee of an ordinary medical procedure has advanced, in reality very little, but the doctor is on the complaint end of this medical care rise.

So, a true program of enlightenment on this subject would help to reverse the image we have unavoidably acquired, without shifting the blame to the druggist or pharmaceutical houses, but to those sources from whence it sprung, which in themselves are also as I have signified blameless.

AXILLARY BLOCK–A PLEA FOR WIDER USE — *Continued from page* 192

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Thrombocytopenic Purpura Due To Quinidine

HAROLD L. OSHER, M.D.* and WILLIAM H. AUSTIN, M.D.**

Thrombocytopenic purpura has been reported as an infrequent hypersensitivity reaction to a variety of chemicals and drugs. Most of the drugs involved, including organic arsenicals, bismuth, sedormid and quinine, have been largely displaced by newer agents. However, quinidine, the dextrorotatory isomer of quinine, remains in general use for the treatment of cardiac arrhythmias. With increasing age of the population and longer survival of patients with cardiac disease, it seems likely that exposure to quinidine has become more widespread. It is therefore not surprising that untoward reactions to this drug, including the relatively rare phenomenon of thrombocytopenic purpura, are being encountered with increasing frequency.

The present report deals with an instance of thrombocytopenic purpura in which the causative role of quinidine was confirmed by *in vitro* tests.

CASE REPORT

A 43 year old white housewife was admitted to the Maine Medical Center on March 15, 1959 because of purpura. She had been in generally good health until December, 1956, when she was hospitalized for treatment of myocardial infarction. Following recovery from the acute episode she was free of cardiac symptoms except for occasional palpitations, possibly related to premature systoles. Eleven months prior to admission she was given quinidine sulfate 0.2 G. three times daily whenever necessary for control of palpitations. During the interval up to 10 days prior to hospitalization, she took the medication sporadically, usually for 1 or 2 day periods, consuming a total of approximately 50 tablets without untoward effect. Nine days prior to admission, she became acutely ill with fever, chills, profound weakness, malaise, nausea and vomiting. These symptoms subsided within twenty-four hours, on self-administered treatment consisting only of rest and aspirin – phenacetin – caffeine tablets. She continued to take quinidine irregularly, 0-3 tablets daily, without apparent ill effect, although the menstrual period occurring during the week preceding hospitalization was characterized by unusually heavy flow. Three days prior to admission she noted a peculiar taste in her mouth, which she subsequently identified as that of blood. On the day preceding hospitalization, she noted multiple small bruises scattered over her body, bleeding from the gums and persistent mild epistaxis. Between 5 PM and 8 AM, she took three quinidine tablets. During the night she had shaking chills. On the morning of admission, a number of fresh bruises were noted and excessive bleeding was noted from minor cuts sustained while shaving her legs.

There was no past history of bleeding tendency with the exception of possibly excessive oozing following dental extractions. Menstrual flow had never been heavy except during the most recent period mentioned above. Caesarean section in 1945 and excision of an anal fissure in 1957 were carried out without abnormal bleeding. The history was negative with respect to exposure to toxic chemicals or ingestion of drugs other than the aforementioned.

FIG. 1. Photograph of patient's legs showing ecchymoses and petechiae.

Family history was of incidental interest in that the patient's father died at age 40 and her mother at age 41 of heart disease of undetermined type, and a brother succumbed to a coronary thrombosis at age 51. There was no family history of hemorrhagic diathesis.

Physical examination revealed a well nourished white female who was in no distress, except for anxiety occasioned by her conviction that she was suffering from a fatal illness. Multiple ecchymoses, approximately 1-3 cm in size, were scattered over the legs, arms and anterior chest, and similar isolated lesions were present on the face and other areas of the trunk. Numerous petechiae were present over both lower legs, and several small and very superficial abrasions and lacerations of the legs were surrounded by dried blood. (Fig. 1) There was slight bleeding from the nose and dried blood was present in both nostrils. Blood oozed from the gum margins; small hematomas were present on the buccal mucosa and tongue, and several petechiae were seen on the buccal mucosa. There was marked capillary fragility, as evidenced by numerous fine petechiae at the antecubital site where pressure was applied to an alcohol sponge following venepuncture. Cardiac examination was unremarkable. The liver and spleen were not felt and no lympha-

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TABLE I

SUMMARY OF LABORATORY DATA

Hospital Day	*1*	*2*	*3*	*6*	*8*
Platelets (/mm³)	50,000	210,000	180,000	247,000	274,000
Clotting Time Lee-White (min)	37		23		10
Clot Retraction	None	Fair			Good
Bleeding Time (min)	1½				
Prothrombin Concentration (% activity)	84				
Prothrombin Consumption (%)		43			
Coombs Test		Neg.			
Bilirubin (mg/100ml)		0.6			
BUN (mg/100ml)		14			
Cholesterol (mg/100ml)		188			
Glucose, fasting (mg/100ml)		87			
Urinalysis		Normal			
Hemoglobin (g/100ml)		12.0			
Hematocrit (%)		33			
W.B.C. (/mm³)		6,850			
Neutrophils (%)		80			
Lymphocytes (%)		19			
Monocytes (%)		1			

denopathy was noted. The temperature on admission was 99.6° orally.

Chest roentgenogram revealed no abnormality of the heart, lungs or bony thorax. An electrocardiogram revealed findings consistent with old anteroseptal myocardial infarction.

Routine hematologic and other laboratory data are summarized in Table 1. Special studies are described below.

Since quinidine was strongly suspected as the etiologic agent it was withdrawn on admission to the hospital, and all other medications were withheld. The patient's temperature fell to normal on the second hospital day and remained so. Active bleeding from the mucous membranes of the nose and mouth subsided within 24 hours, and no new purpuric lesions were observed after that time. The hospital course was thereafter characterized by spontaneous resolution of the purpura, and the patient was discharged on the 11th hospital day with advice never to take quinidine again. In the four years since discharge, she has remained entirely well and has had no further purpuric manifestations.

CONFIRMATORY STUDIES (MODIFIED FROM LARSON)[1]

1. *Demonstration that quinidine inhibited clot retraction of patient's blood* in vitro.

A solution of quinidine containing 100 micrograms of quinidine sulfate per ml was prepared by dissolving 100 mg in 1000 ml of 0.85% saline. Two graduated centrifuge tubes were then prepared, the first containing 1.0 ml of 0.85% saline and the second containing 0.5 ml each of 0.85% saline and the quinidine solution. On the 2nd hospital day, 2 ml of freshly drawn venous blood from the patient was added to each of the tubes, which were promptly agitated to mix the contents

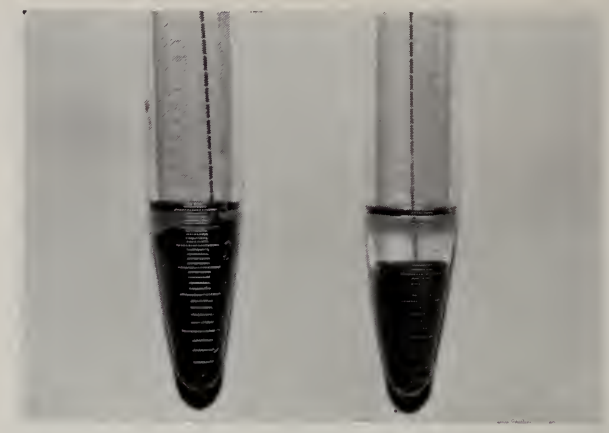

FIG. 2. Demonstration of impaired clot retraction of patient's blood in the presence of quinidine. The tube on the left, containing quinidine solution to which freshly drawn venous blood from the patient has been added, shows poor clot retraction. The control tube on the right, containing saline solution and freshly drawn venous blood from the patient shows good clot retraction.

FIG. 3. Demonstration of impaired clot retraction of normal blood in the presence of both quinidine and the patient's serum. The 4th tube containing quinidine solution and the patient's serum to which freshly drawn normal venous blood has been added, shows poor clot retraction. Normal clot retraction occurs in the first three tubes containing only saline solution (1st tube), quinidine solution (2nd tube), or patient's serum (3rd tube), to which normal blood has been added.

thoroughly, capped and then placed in a water bath at 37° C. The tubes were observed at the end of 4 and 24 hours to determine the degree of clot retraction. This procedure was repeated on the third, fourth, fifth, seventh, and eighth days. On each occasion, clot retraction of the patient's blood was poor in each of the tubes containing quinidine solution, whereas it was good in the control tubes containing saline solution. (Fig. 2)

2. *Demonstration that the patient's serum, in the presence of quinidine, inhibited clot retraction of normal blood.*

Four centrifuge tubes were prepared; the first, containing 1.0 ml of 0.85% saline; the second, 0.5 ml each of saline and the previously described quinidine solution; the third, 0.5 ml each of saline and the patient's serum; and the fourth, 0.5 ml each of quinidine solution and the patient's serum. Two ml of freshly drawn venous blood from a healthy young adult who had never taken quinidine was then mixed with the contents of each tube, and the tubes incubated as in the previous experiment. As illustrated in Fig. 3, clot retraction of normal blood

was markedly inhibited in the presence of the patient's serum and quinidine (fourth tube), whereas normal retraction occurred in the presence of either quinidine or the patient's serum alone.

Discussion

Seyderhelm[2] first mentioned thrombocytopenic purpura in association with quinidine in 1927. However, Broch[3] in 1941 was the first to record a case in detail and to prove the etiologic role of quinidine by reproducing the clinical and hematologic pictures with a test dose of the medication. Although the second reported case did not appear until 1947[4], each subsequent year has been marked by the appearance of at least one case report[5–36], so that by 1956, Bolton and Dameshek[28] were able to collect 23 reasonably well documented cases[1,3–18,20–24], to which they added five of their own. Hunt, Anderson and Hanlon[34] in 1958, referred to "at least nine" additional documented cases[25–27,29,30], and added an acceptable case of their own (along with three incompletely documented cases). Schen and Robinovitz reported a single proved case.[35] Bishop, Spencer and Bethel[36] included a case[19] apparently overlooked by previous authors, together with three cases[31–33] published in 1957 and six new cases of their own.

Upon review and tabulation by the present authors, it appears that fifty cases have been reported to date in which there is adequate documentation by Dameshek's criteria of "clinical probability," supplemented in most cases by confirmatory *in vitro* tests or a diagnostic response to a test dose, or both. An additional seven cases[2,34,37,38] have been reported in which the clinical data were inadequate for proper evaluation (3 cases), or the diagnosis of quinidine purpura was not established beyond reasonable doubt (4 cases). In any event it seems apparent that this disease, although being recognized with increasing frequency, is an uncommon complication of quinidine therapy. Information regarding age and sex was available to us in 48 documented cases. Predilection for the female sex in the ratio of approximately 4:1 is indicated by the fact that 39 were females. Thirty-seven patients were age 50 or older, probably due at least in part to the fact that quinidine therapy is employed more commonly in older persons.

There appears to be no correlation between the dosage and duration of quinidine therapy on the one hand and the incidence and severity of purpura on the other. Purpura has been reported after a total dose of only 0.8 g. In most cases previous courses of quinidine therapy had been given, although several instances of purpura occurring from 4 to 57 days after the start of a sustained first course of therapy have been reported. Hemorrhagic manifestations have usually begun within a few hours of the last dose of quinidine, but delays of up to one week have been reported in a few instances. Recurrent purpura of increasing severity has been observed with intermittent quinidine therapy.[11,34]

Although acute thrombocytopenic purpura is characteristic, there may be considerable variation in the severity and duration of the syndrome. A prodrome consisting of malaise, weakness, lethargy, muscle or joint pains, pruritus, epigastric distress, nausea and vomiting, diarrhea, abdominal cramps, chills and fever may be followed by the gradual onset of bleeding. Mild epistaxis or oral bleeding often presages the development of disseminated purpura, but sudden severe hemorrhage from multiple organ systems may occur without warning. Generalized petechiae and ecchymoses are frequent, with some predilection for involvement of the limbs; bleeding from the nasal and oral mucosa is common, with gingival oozing and hemorrhagic bullae in the oral cavity. In severe cases, gastrointestinal bleeding, hematuria, uterine or intracranial hemorrhage may ensue.

Upon cessation of quinidine administration, bleeding usually subsides within a few days, and complete clinical and hematologic recovery generally occurs within a week. However, bleeding in a vital area may lead to permanent disability or death, as evidenced by the recent report of an authenticated fatal case.[31] (Two additional reported fatalities occurred in inadequately documented cases).[37,38] The value of treatment with corticosteroids or adrenocorticotrophic hormone is questionable, and it has been recommended that they be employed only in the more severe cases.[28,36] Platelet transfusions are likewise of doubtful worth in the presence of circulating quinidine, since the infused platelets would be rapidly destroyed.[36]

The diagnosis can usually be made on clinical grounds. In addition to the symptoms and signs described above, typical laboratory findings of acute thrombocytopenia are present, with platelet counts reduced to 50,000 or less, increased capillary fragility, markedly impaired clot retraction, and prolonged bleeding time in most cases. Anemia, when present, is usually due to blood loss, although an associated hemolytic anemia has been reported in one case,[39] and both severe iron deficiency anemia and a positive direct Coomb's test in another.[23] Leukopenia, sometimes with neutropenia, occurs uncommonly.[28,36] The bone marrow is generally normal except for the megakaryocytes, which are usually present in normal numbers but show little or no demonstrable platelet production; an increased number of naked magakaryocyte nuclei may also be present.[28]

The mechanism of drug-induced purpura was elucidated by Ackroyd with the demonstration that in thrombocytopenia due to Sedormid, an abnormal factor in the patient's plasma causes platelet agglutination in the presence of the drug. Later studies[1,17,20,23,28] have shown that a similar process occurs in quinidine purpura. It is generally agreed that quinidine acts as a haptene, which combines with platelets of the sensitized patient to evoke the production of antibodies in the plasma. These antibodies, in the presence of quinidine, cause platelet agglutination with destruction or removal from the circulating blood. Both quinidine and

the antibody are necessary for the reaction, which affects platelets from normal persons as well as sensitized patients.

Confirmation of the diagnosis is best achieved by *in vitro* methods. The simplest of these is the demonstration that quinidine, when added to the patient's blood, or to normal blood mixed with the patient's serum, causes inhibition of clot retraction[1]. Similarly, agglutination of normal platelets may be demonstrated on incubation with quinidine and the patient's plasma.[17,23,35]

Administration of even a small test dose of quinidine to the sensitized patient usually causes a precipitous and profound drop in the platelet count, often with recurrence of purpura. Because of the obvious hazard to the patient, this method of confirmation should probably not be employed.

Skin tests are of little use for confirmation of quinidine thrombocytopenia. Intracutaneous tests may be hazardous; scratch tests and patch tests may give false negative results, and when positive do not necessarily relate to the thrombocytopenic reaction.[1,12,36]

Summary

A case of thrombocytopenic purpura due to hypersensitivity to quinidine has been described, in which the diagnosis was confirmed by simple *in vitro* tests. Review of the literature has yielded 50 well documented cases, and delineated the features of this syndrome, which is being recognized with increasing frequency. The importance of prompt recognition of early symptoms and immediate withdrawal of the offending drug is stressed.

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From the Secretary's Notebook

110th Annual Session of the Maine Medical Association House of Delegates

(Continued from the August issue — page 182)

Report of Executive Director

It was voted by the House of Delegates that a summary of the report of the Executive Director be sent to each County Secretary with the suggestion that it be on the agenda at a future meeting of the county society.

Recommendation by Health Insurance Committee

Francis A. Winchenbach, M.D., Chairman of the Health Insurance Committee, stated that since the committee report in the House of Delegates folder was written, there had been a meeting of the Committee on June 19th at which it was voted to recommend to this House that they take a positive action and strongly urge the Board of Directors of the Associated Hospital Service of Maine to extend the high level Blue Shield program to all groups and that the Association members on that Board be instructed to vote for this in a positive and definite fashion. This recommendation was approved by the House of Delegates.

Recommendation by Committee on Conservation of Vision

Dexter J. Clough, 2nd, M.D., Chairman of this Committee, stated that in the committee report (which was included in the House of Delegates folder) he had requested that the House of Delegates approve the distribution of the booklet "Medicine, Optometry and the Public Welfare" by the Maine Medical Association to its members and that the same body authorize the committee to distribute informative literature on eye care to schools and to doctors' offices.

Both of these requests were approved by the House of Delegates. (The pamphlet referred to above has been sent to each member of the M.M.A. in accordance with this vote of the House of Delegates.)

Report of Secretary-Treasurer

The following statistics were included in this report: as of June 1st there were 888 members of the Association; 766 Active, 54 Honorary, 39 Senior, 15 Affiliate, 8 Junior, 3 in Military Service and 3 Service Affiliate Members. We have added 25 new members to our roster during the past year, but have lost 15 by death and 12 by transfer to other states.

The report further called attention to the financial statement for fiscal year ended December 31, 1962 (which was included in the House of Delegates folder) and that income in excess of expenses was $4,246.76 in spite of the marked decrease in advertising income.

To be continued

The Fall Clinical Session

of the

MAINE MEDICAL ASSOCIATION

will be held at

BANGOR, MAINE

on Wednesday, October 16, 1963

PROGRAM CHAIRMAN

DONALD COULTON, M.D.

Watch your mail for information relative to this Session

DEAN H. FISHER, M.D.
COMMISSIONER

State Of Maine

Department of Health and Welfare

Hospitalization And Nursing Home Care Of Public Assistance Recipients And Aged Persons

EDSON K. LABRACK, M.P.H.*

The Department of Health and Welfare served slightly over 9,000 public assistance recipients and aged persons, through payment of approximately $4,100,000 for hospital and nursing home care during the fiscal year 1962. This was the first year for provision of medical care for aged persons under the so-called "Kerr-Mills" legislation.

Table 1 shows the number of recipients and expenditures for each type of care provided. Note that data in the table covers only public assistance (Old Age Assistance, Aid to the Blind, Aid to the Permanently and Totally Disabled and Aid to Dependent Children) and the Medical Assistance to the Aged programs. The report does not include data on Hospital Aid and Crippled Children's programs.

The Medical Assistance to the Aged program was initiated during the year covered by the report, actual program operations beginning January 1, 1962. MAA funds, however, were used for Hospital Aid recipients aged 65 years and over during the last 3 months of 1961, so that MAA data in the report actually covers 9 months of program operation while public assistance data covers a full year.

TABLE 1

Number of aged persons and public assistance recipients receiving medical care and cost of care, by type of care and program: July 1, 1962–June 30, 1963.

Type of Care	*Total*	*MAA*	*ABD†*	*ADC*
Hospital Care				
Persons	7,236	1,470	3,386	2,380
Cost	$1,623,618	$403,597	$901,603	$318,418
Nursing home care				
Persons	2,408	—	2,408	—
Cost	$2,749,073	—	$2,749,073	—
Other care				
Persons	27	14	7	6
Cost	$1,103	$270	$557	$276

†Old-Age Assistance, Aid to Blind, and Aid to Permanently and Totally Disabled programs combined.

*Director, Division of Research and Vital Records.

TABLE 2

Hospital discharges of aged persons and public assistance recipients by duration of hospital care and by program: Maine, July 1, 1961–June 30, 1962.

Duration of				*ADC*	
care in days	*Total*	*MAA*	*ABD*	*Adult*	*Child*
Median duration of hospital care	8.1	11.9	10.4	5.2	4.1
Total discharges	8,685	1,650	4,236	1,532	1,267
1	640	54	307	144	135
2-5	2,769	309	990	785	685
6-10	2,162	406	1,121	372	263
11-15	1,219	294	711	128	86
16-20	672	174	398	51	49
21-25	400	125	235	24	16
26-30	243	84	140	12	7
31-35	164	55	95	5	9
36-40	111	34	67	6	4
41-45	234	69	149	3	13
Over 45	71	46	23	2	—

Nursing Home Care

Nursing home care is provided for recipients of public assistance (OAA, AB, APTD, ADC) but not for aged persons eligible for MAA. There were 2,408 public assistance recipients in nursing homes during report period and total expenditures amounted to slightly under $2,500,000, or about 60% of all expenditures for medical care. Payment for nursing home care is at the rate of $190 per month. The median duration of care in a nursing home was 6.8 months. About 25% of the recipients were in nursing homes for one month or less, and about 17% were in a nursing home for the full year.

Hospital Care

There were 7,236 aged persons and public assistance recipients who received hospital care during the period covered by the report. Data on hospital care is based on 8,785 hospital discharges during the year. These hospitalizations involved a total of slightly over 95,000 hospital days. Total expenditure for these hospitalizations

TABLE 3

Hospital discharges by Diagnosis and program, July 1, 1961–June 30, 1962

Diagnosis	*Total*	*MAA*	*ABD*	*ADC*	
				Adult	*Child*
Total	8,685	1,650	4,236	1,532	1,267
Tuberculosis, all forms (001-019)	24	7	13	1	3
All other infective and parasitic diseases (020-138)	84	3	28	5	48
Malignant neoplasms (140-205)	446	168	232	43	3
Benign and unspecified neoplasms (210-239)	139	18	63	37	21
Allergic disorders (240-245)	136	17	90	11	18
Diabetes mellitus (260)	255	90	151	7	7
Anemias (290-293)	75	26	39	6	4
Psychoses (300-309)	14	5	7	2	—
Other mental, psychoneurotic, and personality disorders (310-326)	76	4	40	22	10
Vascular lesions affecting central nervous system (330-334)	264	76	173	8	7
Diseases of eye (370-389)	108	19	65	6	18
Diseases of ear and mastoid process (390-398)	43	3	7	5	28
Rheumatic fever and chronic rheumatic heart disease (400-416)	20	2	8	2	8
Arteriosclerotic and degenerative heart disease (420-422)	574	156	390	28	—
Other diseases of heart (430-434)	325	108	199	16	2
Hypertensive heart disease (440-443)	76	7	68	1	—
Other hypertensive disease (444-447)	130	20	101	9	—
General arteriosclerosis (450)	83	18	64	1	—
Acute upper respiratory infection (470-475)	102	2	40	11	49
Influenza (480-483)	79	11	44	13	11
Pneumonia (490-493)	363	63	176	18	106
Bronchitis (500-502)	172	16	103	12	41
Hypertrophy of tonsils and adenoids (510)	230	—	3	7	220
Ulcer of stomach & duodenum (540-541)	170	31	106	32	1
Appendicitis (550-553)	96	7	8	13	68
Hernia of abdominal cavity (560-561)	167	33	90	25	19
Gastroenteritis and colitis, except ulcerative (570)	119	9	53	13	44
Diseases of gallbladder (584-586)	237	67	124	45	1
Diseases of male genital organs (610-617)	164	53	86	4	21
Diseases of breast and female genital organs (620-637)	302	19	51	220	12
Deliveries and complications of pregnancy, childbirth and puerperium (640-689)	516	—	14	482	20
Diseases of skin and cellular tissue (690-716)	187	24	82	28	53
Arthritis (720-725)	117	14	96	3	4
Symptoms, senility, and ill-defined conditions (780-795)	516	135	268	60	53
Accidents, poisonings, and violence (N800-N999)	751	157	352	63	179
All other diseases and conditions (residual)	1,525	262	802	273	188

was slightly under $1,625,000, or about 40% of total medical care expenditures during the period.

Duration Of Hospitalization

The median duration of hospital care was 8.1 days for all types of recipients. Medians ranged from a high of 11.9 days for MAA recipients to a low of 4.1 days for child recipients of ADC. Table 2 shows the number of hospital days for each program and the median duration of hospital care.

Diagnoses

The report of hospital discharge for MAA and public assistance recipients calls for diagnostic data concerning the disease or condition requiring hospitalization based on information available to the attending physician at the time of discharge. These diagnoses are coded according to the International Statistical Classification. In a number of cases diagnostic data were incomplete and it was necessary to query records librarians for further information. In about 5% of all discharges symptoms only were shown as diagnoses. On the whole, however, diagnostic data as reported appears to be fairly good and is improving constantly with time as hospitals evolve stable systems for completion of the forms.

About 40% of all hospitalizations were for chronic conditions. In the case of MAA and ABD hospitalizations where older persons are involved over 50% were for chronic conditions. Diseases of the heart, accidental injuries, malignant neoplasms, and pneumonias were the most common diagnoses involving 11.2, 8.6, 5.1, and 4.0% of all hospitalizations. Among adults on the ADC program pregnancy was the most important single reason for requiring hospitalization, involving 31.5% of all such hospitalizations. Among children 17.4% of the hospitalizations were for tonsils and adenoids and 14.1% were for accidental injuries. Table 3 shows selected diagnostic data on hospitalizations.

Maine Heart Association Notes

A Longitudinal Study Of Coronary Heart Disease

". . . a long-term study of coronary heart disease has been in progress at the Hawthorne Works of the Western Electric Company in Chicago . . . The study was undertaken in the belief that coronary heart disease was a disease resulting from the interplay of multiple factors and that there was need to delineate these factors further.

"It was planned to study the characteristics of a male population believed to be free from clinical coronary disease through annual interviews and examinations carried on over a period of at least five years.

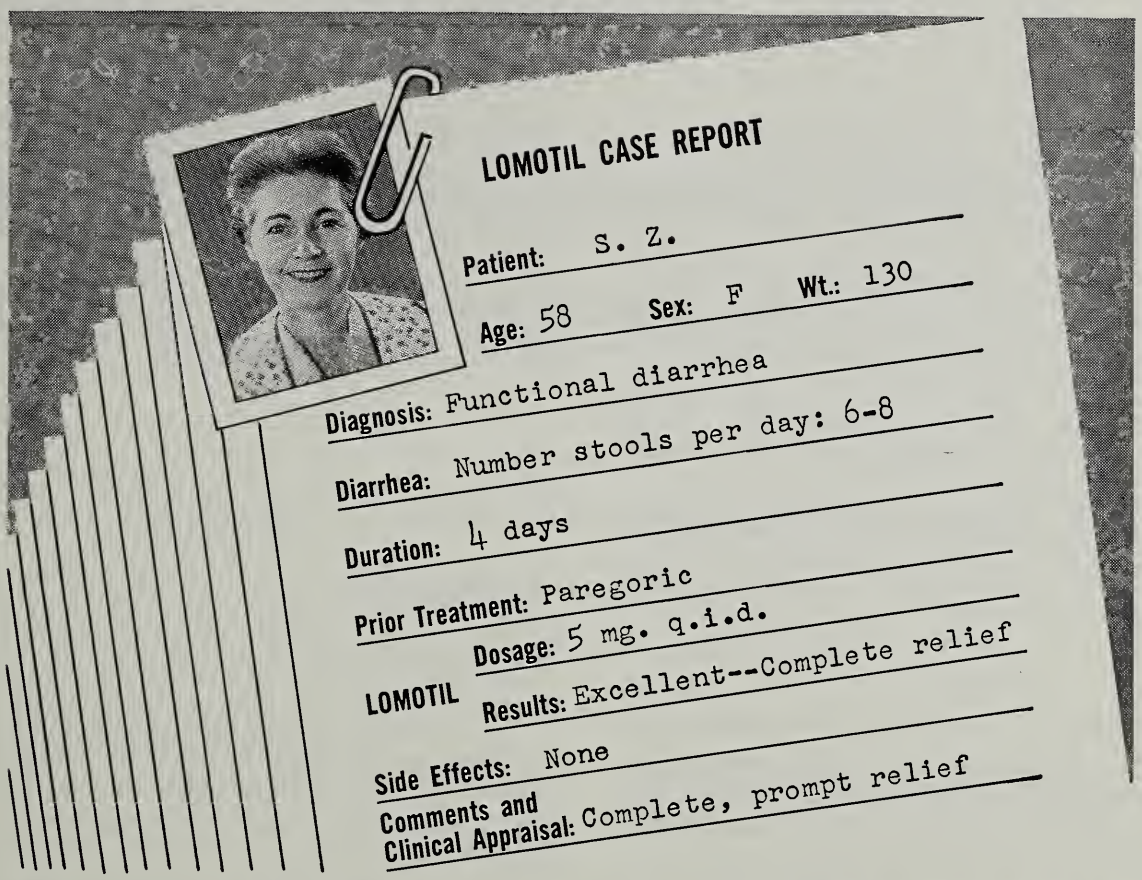
"All men aged 40 to 55 who had been employed at the Works for two or more years were assigned an identification number by a randomizing process. Members of the randomly selected group were then invited to participate in the study–participation was entirely voluntary –by being called from the random list.

"In a base population of 1,989 men, 88 cases of coronary heart disease have developed: angina pectoris, 47 men; myocardial infarction. 28 men; death from coronary diseases, 13 men. This approximates one case per 100 men per year.

"The development of clinical coronary heart disease has shown an association with early age of death of father, history of 'noncardiac' chest discomfort, history of chronic cough, history of shortness of breath, history of peptic ulcer, presence of increased skinfold thickness, elevated blood pressure, AV nicking in the fundi, elevated blood cholesterol, ST and T abnormalities in the electrocardiogram, and use of cigarettes and coffee.

"No relation was encountered between body weight, mean blood sugar levels, lipoprotein lipase levels, or diet (other than coffee), and the development of coronary heart disease. Similarly, there was no association with job type and no certain relation to physical activity off the job."

(Paul, Oglesby, et al. Circulation, Volume 28, pages 20-31, 1963)



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Each **tablet** and each 5 cc. of **liquid** contains: 2.5 mg. of diphenoxylate hydrochloride (Warning: may be habit forming) and 0.025 mg. of atropine sulfate

The direct, well-localized activity of Lomotil relieves spasm and cramping and provides prompt symptomatic control of virtually all diarrheas.

Numerous investigators have remarked on the effectiveness of Lomotil in patients with diarrhea uncontrolled by other agents.

Weingarten and his associates[1] found it "an excellent drug . . . efficacious where other drugs have failed. . . ."

Hock[2] obtained "results superior to prior medications in 68.3 per cent of 41 patients."

Since Lomotil controls diarrhea so consistently, it is only rational to prescribe Lomotil *before* other agents have a chance to prove inadequate. To control diarrhea promptly, prescribe Lomotil promptly.

Lomotil is an exempt narcotic, its abuse liability being comparable to that of codeine. Recommended dosages should not be exceeded. Side effects are relatively uncommon but among those reported are gastrointestinal irritation, sedation, dizziness, cutaneous manifestations, restlessness and insomnia. Lomotil should be used with caution in patients with impaired liver function and in patients taking addicting drugs or barbiturates. Lomotil is brand of diphenoxylate hydrochloride with atropine sulfate; the subtherapeutic amount of the latter is added to discourage deliberate overdosage.

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Research in the Service of Medicine

News, Notes And Announcements

New England Postgraduate Assembly November 13, 14 and 15, 1963

The New England Postgraduate Assembly will be held at the Statler Hilton in Boston, Massachusetts on November 13, 14 and 15, 1963.

Subjects of interest for the three day session will include:

Wednesday — *Diabetes, Fluid and Electrolytes, Diuretics, Obstetrical Problems, Dangers of Drugs, Practical Office Psychotherapy* and *Breast Cancer.*

Thursday — *Cerebrovascular Disease, Strokes: Big and Little, Physical Fitness and Athletic Injuries, Hepatic Coma, Common Eye Problems, Nasal Injuries, Genetics* and *Clinicopathological Conference.*

Friday — *Adrenal Steroids, Obscure Fevers, Cardiac and Respiratory Resuscitation, Chronic Bronchitis and Pulmonary Emphysema, Emergency Treatment of Burns, Hearing Problems, Chronic Pain, Intractable Angina* and *Gynecologic Endocrinology.*

Annual Meeting of American Cancer Society, Inc.

The annual meeting of the American Cancer Society, Inc. will be held on October 21-25, inclusive at the Biltmore Hotel, Madison Avenue at 43rd Street in New York City. The Scientific Session will be held on October 21 and 22 and the theme will be "Unusual Forms and Aspects of Cancer in Man."

This years Scientific Session jointly sponsored by the New York Academy of Sciences, the National Cancer Institute and the American Cancer Society will be of unusual interest to physicians.

The topics will include "The Natural History of Untreated Cancer," "Cancer at the Extreme Ages of Life," "Occult Carcinoma," "Radiation Induced Cancer," "Cancer and Pregnancy" and "Multiple Primary Cancers."

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From Ehrlich-Pirquet To Medawar And Burnet

A Revolution In Immunology*

H. S. Baar, M.D., Ph.D., M.R.C.P.**

It is always somewhat embarrassing to select names for the heading of a paper. Some injustice is unavoidable. Discussing the classical immunology one should certainly mention *Jenner, Pasteur, Behring, Theobald-Smith, Bordet, Ramon,* and *Landsteiner,* and among the pioneers of the cellular immunology *Jerne, Lederberg, Simonsen,* and *Sherwood-Lawrence* should be listed. However, I selected *Ehrlich* as the one who most clearly formulated the antigen-antibody reactions, *Pirquet* who recognized immunological reactions as the basis of many diseases, *Medawar* and *Burnet* as the Nobel Prize winners for the new immunology. Actually observations related to immunology have been known from time immemorial. It was known that man suffered from some communicable diseases only once in their life. The Chinese observed that persons whose skin was infected with contents of a smallpox postula developed usually only a mild disease and were later on spared in smallpox epidemics. This was the basis of variolization which Lady Montague introduced to England from Istanbul. But the results were uncertain and the procedure never became popular in Western countries.

Although the great Franciscan monk, Roger Bacon, known as the "doctor mirabilis," advocated experimentation as means for acquiring knowledge in the second half of the 13th century, it was not until the 18th century that *Jenner* performed the first experiments in immunology. In Gloucestershire he heard folk tales that dairy maids who developed cowpox were spared in smallpox epidemics. He transferred, therefore, contents of cowpox from the hands of the dairy maid Sarah Phelps to other individuals and claimed to have them protected against smallpox. The report of this now classical experiment was submitted to the Transactions of the Philosophical Society in London which refused the publication because in their opinion *Jenner* did not prove his point of view.

After discovery of tetanus and diphtheria antitoxine by *Behring,* the basis for a general theory of immunity was developed by *Ehrlich.* It was mainly supplied by innumerable experiments on diphtheria toxin and antitoxin, carried out with mathematical accuracy. Diphtheria toxin is a poison produced by the Corynebacterium diphtheriae and found in the nutrient broth freed from the microorganisms. The experimental animal was the guinea pig which developed on the site of subcutaneous injection a wood-hard edema and died within a few days with bilateral hemorrhagic infarction of the adrenals. The smallest amount of toxin which kills a guinea pig of 250 g weight within 4 days was called dosis lethalis minima (DLM). Later *Römer* introduced the figure DNM (dosis necrosis minima), this being the smallest amount of toxin which after intracutaneous injection produces a red, hard infiltration with a central necrosis. If animals are repeatedly injected with very small amounts of toxin they develop in their serum a substance which neutralizes the toxin and can protect other animals against several lethal doses of diphtheria toxin. Innocuous mixtures of toxin and antitoxin were for some time used for diphtheria immunization. If the toxin is treated with formaldehyde it loses its toxic property and yet provokes on injection into the body, the formation of the substance neutralizing toxin, the anti-

*Seminar given at The Pineland Hospital, Pownal, Maine; Superintendent, Dr. Peter W. Bowman.

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body or, in this case, antitoxin. Such an altered toxin is called toxoid or anatoxin and is nowadays used for protection of children against future attacks of diphtheria. From these experiments *Ehrlich* concluded that the toxin molecule has two separate groups, one responsible for tissue damage, the toxophore, the other combining with the antibody and responsible for antibody formation, the haptophore group. *Kuhns* and *Pappenheimer* have shown that injections of diphtheria toxoid induce in man three different types of antibodies. Originally an antitoxin unit was called the amount of antitoxin which can neutralize 100 DLM, but toxin is unstable while dried antitoxin can be preserved unchanged for indefinite periods. A dried antitoxic serum is therefore used for standardization of any given toxin and with the help of such standardized toxin the amount of antitoxin in any serum can be exactly determined. Originally the protection of guinea pigs against fatal doses of toxin was used for testing; later the protection against necrosis after intracutaneous injection; and finally, according to the method of *Jensen,* the rabbit's abdominal skin is used for titration. In this way 1/200 of an antitoxin unit in a ml serum can be exactly determined. The virulence of a suspected culture of a diphtheria-like organism is tested by the injection into the guinea pig, including protection by antitoxic serum. Recently an elegant method has been developed by *Elek.* It is based on the agar-diffusion technique of *Ouchterlony.* When the suspected organism is plated on agar, and at some distance a hole is filled with diphtheria antitoxin, a line of precipitation develops between the culture and the antitoxin where toxin and antitoxin have their so-called optima ratio. Work on toxins and on bacterial antigens led Ehrlich to the formulation of the side-chain theory which for several decades dominated the immunological thought. "It has been developed and modified with extreme ingenuity by himself and by his collegues to meet the demands made upon it by the continuous accumulation of new and often disconcerting facts" (*Topley* and *Wilson*).*

Antigens are substances which when introduced into an animal's body evoke the formation of antibodies, i.e. substances which combine specifically with the antigen. The relation is generally 1:1 and the antigen fits into the antibody like a key into a lock. Some antibodies react directly after combination with antigens, others combine by one reactive group with the antigen, while by another group they combine with an unspecific thermolabile component of the blood serum called complement. Such antibodies are called amboceptors. The combination of antigen and antibody may lead to the formation of precipitates, insoluble complexes, soluble complexes, to agglutination, i.e., sticking together of bacteria, red cells, platelets or leucocytes or to coating of the antigen in such a way that it becomes victim of cells with phagocytic property, i.e., it becomes ingested by these cells. These antibodies are called opsonins. Polymorphonuclear leucocytes can ingest inert particles such as india ink or fat droplets. Phagocytosis of inert particles is not related to immunological phenomena, it is only evidence of functional integrity of white blood cells. Forty-five years ago I introduced quantitative estimation of phagocytosis of oil droplets as functional test for leucocytes. However, if phagocytosis is tested with a culture of streptococci the polymorphonuclear leucocytes are inactive unless the streptococci have been treated previously by a specific antiserum or killed by heat. Related to phagocytosis is the phenomenon of immunoadherence, described by *Nelson.* This is the fixation of microorganisms sensitized by specific antibodies to human red blood cells in the presence of complement. This is the basis of the treponema immobilization test.

Agglutinins are specific antibodies which cause clumping of bacteria, red blood cells or platelets. The majority act without complement. The presence of such antibodies is the basis of the Widal's test. If several species of bacteria are agglutinated by the examined serum, the organism responsible for the agglutinating antibodies is recognized by absorbing the serum with every one of these microorganisms separately and testing the absorbed serum against all organisms which gave a positive reaction. Conversely, testing microorganisms with specific agglutinating antibodies the organisms can be identified and their antigenic structure elucidated. Pretreatment with formol or with alcohol is necessary for demonstration of surface or deeply situated antigens. Some agglutinins act only in higher dilutions having an inactive prozone. This is the case with agglutinins against Brucella. Some agglutinins are incomplete, i.e., they act only in the presence of bovine albumin, concentrated AB-serum, high molecular dextran, etc., or if the red cells (antigen) are enzyme-pretreated. Such incomplete antibodies are very important in testing of Rh- and other iso- and autoantibodies. When absorbed to the surface of red cells they prevent their agglutination by complete anti-Rh sera. This is the basis of the Race-Wiener test. Antigens may be situated in the cell periphery (e.g. flagellar or capsular antigens of bacteria) or deeper in the cell body (such as bacterial O antigens). Skin sensitizing antibodies are called reagins. Soluble antigen-antibody complexes persist for a long time in the body in contrast to precipitates and agglutinates which are rapidly eliminated. In addition to antigens characteristic for a specific microorganism or proteins of a specific animal, there are antigens widely distributed through the animal kingdom. Such are the *Forssman* antigens and the corresponding antibodies are called heterophil. The whole animal kingdom can be divided into two groups: one which possesses the *Forssman* antigens and another (which includes man) which has no such antigens but is able to produce the correspond-

*At variance with the original side chain theory of Ehrlich, *Najjar* et al, reported recently experiments which indicate that the antibody-antigen reaction results in a change of the surface configuration of both antibody and antigen. The work is summarized in Ann. New York Acad. of Sc. *103,* 688, 1963.

ing antibodies. The knowledge of these antibodies is the basis for the *Paul-Bunnel* and *Davidsohn* tests in glandular fever.

An important discovery was that of *Obermayer* and *Pick* who found that the antibody formed after injection of iodinated albumin did not react with the original albumin but with several proteins, the tyrosyl groups of which had been iodinated. This work is almost unknown in Anglo-American literature, although it was the forerunner of the classical experiments of *Landsteiner* who used for immunization azoproteins. The latter have the general formula $P(-N=N-C_6H_4.R)n$ where P is the protein and R a side-chain, a specific group which determines the specificity of the antibody. Thus, antibody cannot only distinguish between chemically different groups, but also between stereo-isomers, between levo- or dextro-rotatory compounds. These experiments showed not only the enormous number of antibodies which organisms can produce, but also that only a small part of the antigen molecule, the determinant group, is responsible for the antibody formation. Some groups combine with corresponding antibodies, but are unable to elicit the formation of antibodies when injected into animals without so-called carriers. These are called haptens, the best known example of which are the pneumococcal polysaccharides. Some haptens form with the antibody precipitates in vitro, others do not. There are some general rules concerning the chemistry of antigens. The strongly acidic or basic groups have a high specificity while fatty acid residuals with the long paraffin chain proved to be devoid of serological specificity. Generally it was found that a certain rigidity and polarity of determinant groups is a prerequisite of antigenicity. A substance or bacterium acting an antigen may have several determinant groups and elicit the formation of several antibodies, but an antibody has one specificity (see below).

As you can see from this brief survey immunology was for a long time synomymous with serology. The first indication that cells have a more essential role than giving up antibodies into the circulation was provided by the study of anaphylaxis and the hypersensitivity reactions. The uterus of a guinea pig sensitized by bovine serum contracts when placed outside the body in the same serum and this contraction can be produced even when the uterus had been perfused with Ringer's solution prior to being placed in the serum. This is known as the Schultz-Dale phenomenon. The other relevant phenomenon is that of *Praussnitz-Küstner*. If the serum from a patient with pollen hypersensitivity is injected intracutaneously into the skin of a non-sensitive individual and 24 hours later a small amount of the pollen extract injected into the same place, this injection results in a prompt formation of a red wheal. Thus, antibodies of the serum became fixed in the recipients cells, they became sessile. The great importance of these sessile antibodies was stressed by *Doerr* in his monograph on anaphylaxis. However, there are other immunological reactions in which no antibodies are demonstrable in the serum, but present in some special cells, the immunologically competent cells. That is the case in delayed hypersensitivity reactions like the tuberculin reaction and particularly the transplantation reaction. It is known that transplants are accepted if they are taken from the same individual, autotransplants, or from an identical twin or in animals of highly inbred strains. The mechanism of rejection of homotransplants, the massive accumulation of lymphocytes was studied by *LeoLoeb* and summarized in a book entitled BIOLOGICAL BASIS OF INDIVIDUALITY. However, the fundamental proof that this rejection is an immunological reaction is the work of *Medawar* at that time professor of zoology at the University of Birmingham (England). If a skin homotransplantation is carried out in a mouse and repeated some time later from the same donor, the second transplant is more rapidly rejected than the first one, it shows the second response characteristic for immunological reactions. In other words, we have the same phenomenon as that described by *Pirquet* as allergy. This was defined as the altered reaction of an animal or human individual to an antigen with which it or he had a previous contact. The word allergy is nowadays frequently used as synonymous with hypersensitivity. However, in Pirquet's definition it comprised immunological resistance, accelerated reaction, immediate and delayed hypersensitivity, negative and positive anergy. *Pirquet* attempted to explain all these phenomena, particulary revaccination, tuberculin reaction and serum sickness on the lines of classical humoral immunology. However, we have learned of immunological phenomena like the rejection of transplants in which humoral antibodies play no role and delayed hypersensitivity cannot be transmitted by serum injection but in highly inbred animals by injection of a cell suspension from lymph nodes or spleen. Such observations put the cell in the center of immunological theories and raised the question, which cells are responsible for immunological phenomena or are "immunologically competent cells." Many experiments ascertained that these are plasma cells, lymphocytes and monocytes. Plasma cells are mainly responsible for the formation of antibodies which pass into the plasma, and their formation of antibodies is evidenced by their deep basophilia due to the content in ribonucleic acid, the latter being the forerunner of protein synthesis. This is particularly clear from the absence of humoral antibodies and of plasma cells in congenital agammaglobulinaemia. Antibodies are globulins, namely gamma- and $beta_2$-globulins. They have the same chemical composition as normal gammaglobulins without antibody specificity. Lymphocytes are mainly responsible for cellular immunity without humoral antibodies.

The mechanism by which the antigen enters the immunologically competent cells has been thoroughly investigated. Phagocytosis plays a rôle only in whole microorganisms or other corpuscular elements. Otherwise,

the process is subcellular or even submicroscopic. One is pinocytosis, the uptake of minute droplets and their transport towards the mitochondria. The way in which droplets of a protein solution are transported into the interior of the cell has been studied particularly in amoebae, but also in normal mammalian cells with the help of fluorescein conjugated proteins. The other is the so-called rhopheocytosis (*Bennet*). Electron microscopic investigations have shown infolding of the cell membrane. Such folds may become strangulated within the cytoplasm of a mononuclear cell and become vacuoles. If minute particles are adherent to the cell membrane this could be a mechanism of transport of antigenic particles into the interior of an immunologically competent cell. *Dameshek* proposed the name immunoblast for the common precursor of lymphocytes responsible for delayed hypersensitivity (and graft rejection) and plasmocytes responsible for humoral antibodies, both being called active immunocytes. Although this is a justified functional momenclature, it must be borne in mind that the immunoblast is morphologically indistinguishable from the hematocytoblast, the common myeloid-erythroid precursor. In addition, the formation of plasma cells from large lymphocytes has to be borne in mind.

We have already mentioned that if transplants are accepted from identical twins or highly inbred animal strains, they are tolerated. There are other forms of tolerance. If a suspension of embryonic lymphocytes is injected into another embryo or in some animals on the first day after birth (in others only in the first half of pregnancy) the animal will tolerate transplants from the same donor animal for several months, they show a specific immunological unresponsiveness. In this way a white mouse may tolerate a skin graft from a black mouse. This tolerance remains as long as any traces of the antigen are present in the recipient animal. A similar tolerance may be obtained by sublethal x-ray irradiation. A mouse given a lethal dose of x-rays may be saved by a transfusion of lymphocytes or bone marrow from another mouse. The donor's lymphocytes survive in the recipient's organism while the latter's immunologically competent cells have been destroyed by radiation. This has been shown by elegant experiments of *Ford, Loutit,* and *Mole* who used as donors and recipients animals with different chromosome patterns. Thus, real chimerae are produced. Natural chimerae occur where there is a vascular communication between dizygotic twins. Receiving cells of the twin in embryonic life the animal becomes tolerant. This is known in cattle as freemartins, remarkable also for the influence of male hormones on the development of the female twin. In man a vascular communication between non-identical twin embryoes is extremely rare, but in exceptional cases erythrocytes of one twin had been demonstrated in the circulation of the other non-identical twin (*Woodruff* et al.). An interesting example of tolerance was observed at the Rockefeller Institute. A large stock of mice became infected with the virus of lymphocytic choriomenigitis. When the population became heavily infected, including pregnant animals, the majority of the animals showed no symptoms of disease, but when tissues from such an animal were injected into an animal of another stock the recipient developed the disease. Here infection during embryonic life made the animals tolerant and yet harboring great amount of the virus. This is a good example to show how an enemy may be harmless and the defense against this enemy fatal. If lymphocytes from an immune animal are transferred to an animal which is tolerant to these cells, the transfused cells multiply, continue to produce antibodies, and make the recipient animal immune. This is called an adoptive immunity. There are other interesting forms of tolerance which we shall not discuss here.

The "Simonsen Phenomenon" and the "Graft Versus Host" Reaction

If embryonic cells are injected into an embryo of a different strain, the latter becomes tolerant and no disease symptoms develop. The situation is different when the donor is an adult animal. If adult chicken lymphocytes are inoculated on the chorioalantoid membrane of an egg–donor and recipient being not of a closely inbred strain–after a few days a number of white spots and later nodules develop in the chorioalantoid membrane. When spleen of an adult mouse is injected into a one day old mouse of another strain, the injected splenic lymphocytes are tolerated and multiply, but after 2 to 3 weeks the injected animals are smaller than the controls, their hair is not smooth, and they have a sticky diarrhea. This is known as "runt disease" and most of the animals die before 2 months. There is good evidence that both the *Simonsen* phenomenon on the chorioalantoid membrane and the runt disease are the result of the donor's cells reaction against the recipient's tissue components. The embryonic recipient tolerates the donor's cells, but the transplanted adult cells recognize the recipient's tissue as something foreign, "not self," and react in the form of chorio-allantoid nodules or the runt disease. Thus, the question, how does an organism recognize what is self and what non-self, became an essential problem of immunology. Previously, the classical immunology dealt briefly with the fact that own tissue components are not antigenic by Ehrlich's statement of an "horror antigenicus." To account for the antibody formation, the cellular basis of immunity, the problems of self-recognition and immunological tolerance, two theories have been formulated in recent years. The one is the adaptive or informative theory first initiated by *Haurowitz* and elaborated in detail by *Pauling,* the other the selective theory proposed by *Jerne* and in the form of selective-clonal theory advocated in many papers and books by *Burnet.* The first theory attempts to bring the antibody synthesis in accord with our knowledge of protein synthesis and has most protagonists among biochemists, while the selective theory is

supported by most biologists. According to *Haurowitz-Pauling,* the amino acid sequence of proteins is genetically determined while the folding of polypeptide chains is influenced by the contact with the antigen, the chemical structure of the antibody becoming a template of the antigen. The protein becoming an antibody acquires a shape complementarily adjusted to the determinant group of the antigen. The clonal selective theory of *Burnet* assumes that all antibodies are genetically determined and one or a few cells with a specific antibody present in the developing organism. When it comes in contact with an antigen in embryonic life the specific cells become eliminated; therefore, cells reacting with own tissue components disappear and the organism acquires the ability to react with all antigens except those which are own tissue components, it can differentiate between self and non-self. In post-embryonic life the contact with the antigen results in a multiplication of the corresponding immunologically competent cell or cells; the formation of a specific clone. The word clone is derived from botany where a population derived from a cell by asexual multiplication is called a clone. The provisional nature of the clonal selective theory is evident from what its author, *Burnet,* says: "It is the simplest self-consistent theory, and, because it is inherently so simple, it is probably wrong." The selective clonal theory gives a plausible explanation for most observations and experiments of immunology, but there are some weak points and the future may produce a compromise between the *Jerne-Burnet* and the *Haurowitz-Pauling* theories. One is somewhat reluctant to assume an enormous number of genetically determined specific cells ready to become mother cells of clones. A high figure for somatic mutation rate of mesenchymal cells is hypothetic but certainly a possibility. It is difficult to explain the previously mentioned relationship between antigenicity and chemical structure. On the other hand, it is difficult to explain "self-recognition" and various forms of tolerance on another basis than the selective theory. It may be that the idea of "one cell-one antibody" will have to be abandoned and replaced by a subcellular (ribosomal) approach. *Sherwood Lawrence's* experiments on transmission of tuberculin sensitivity in humans by cell-free extracts may be explained on that basis. However, except for the work of *Cohn* and *Lennox,* who found evidence of bispecific antibody-forming cells, there is no evidence that a single cell can form more than one antibody. *White,* using the double tracing fluorescent antibody technique, found different antibodies to two different antigens in separate cells of a single lymph node.

Recently *Burnet* extended and slightly modified his clonal selection theory. This modification was based on experiments on a strain of mice "NZB" described by *Bielschowsky,* director of the New Zealand cancer institute and son of the distinguished German neuropathologist. Mice of this strain suffer of a genetically determined autoimmune hemolytic anemia, including a positive Coombs' test. The thymus of these animals shows follicles with conspicuous germinal centers and the disease can be prevented by thymectomy. In addition, it was found that thymectomized rabbits and rats thymectomized shortly after birth have an impaired antibody formation. *Burnet* assumes that all thymus cells–cortex and medulla–are of epithelial endodermal origin. The thymic lymphocytes are the first immunologically competent cells and all the lymphoid tissue in the body arises from colonization of thymic lymphocytes. Immunologically immature cells, still morphologically of epithelial character, may produce incomplete and abnormal antibodies against the body's own tissue components. This attractive hypothesis adds new, unproven assumptions to the original clonal-selective theory. Most histologists agree with *Hammar*–who spent all his life in the study of thymus–that thymus is of dual origin: the medulla from branchial epithelium, the cortex from mesenchyma. The rapid disappearance of the cortex with preservation of medulla in acute infectious diseases, the disappearance of myasthenia gravis with the change of a lympho-epithelioma into thymic carcinoma are more in favor of a dual nature of thymus than an entirely endodermic origin. Muscle autoantibodies have been demonstrated in myasthenia gravis by *Strauss* et al. Guinea pig thymus reacts immunologically to directly introduce bacterial antigens, but not to circulating antigens. It is therefore possible that normal thymus is shielding a "forbidden clone" and that this barrier is broken down if both components become neoplastic, like in lympho-epithelioma or the balance is disturbed by lymphatic proliferation with formation of germinal centers.

From this brief survey it may be seen that although many fascinating discoveries have been made in immunology and ingenious hypothesis put forward, the face of the new immunology is still a changing one and a satisfactory coordination of all known facts remains to be accomplished in the future.

What are the clinical implications and the practical applications of the new immunology? First is the understanding of auto-immune diseases, such as acquired hemolytic anemia, Hashimoto's thyroiditis, rheumatoid arthritis and systemic lupus erythematosus. In 1945 I have reported on acute hemolytic anemia in a case of subacute hepatitis (red atrophy). The patient's serum contained complete agglutinating antibodies against all tested (about 100) human erythrocytes independently of all known blood groups. The antibody had the character of a panagglutinin except that the temperature range was up to 37°. The serum agglutinated red blood cells of rabbits, guinea pigs, rats, and mice, but absorption with the cells of any of these animals removed only the agglutinins against that species. Only absorption with human erythrocytes removed all agglutinins. I have assumed that the necrotic liver liberated an antigen common to all human cells, including erythrocytes, and stimulated the formation of an antibody against an

antigen of species specificity. This was, to my knowledge, the first report of an acquired autoimmune disease and an attempt of explanation. A similar hypothesis was later, among others, discussed by *Grabar* and the self + X theory of *Sherwood Lawrence* is also similar to that one. The latter author assumes a combination of own tissue components with a variable and often unknown agent, and this combination forms an antigen which is not recognizable as "self." The proof that the majority of acquired hemolytic anemias, particularly those resembling congenital spherocytosis, are due to autoantibodies was provided by the work of *Loutit* and *Mollison* who demonstrated a positive Coombs' test in almost all of these anemias. However, not all antibodies in autoimmune hemolytic anemias are panagglutinins with species specificity. *Weiner* has demonstrated in several cases antibodies against factors of the Rh-system, mainly, anti-e. It appears that there are several modes of formation of autoantibodies: in some an altered tissue component (or self + X) is the antigen not recognized as self; in other instances a noxious agent like infection may expose deeply situated antigens which are normally concealed and therefore not recognizable as "self."

The other disease in which autoimmunization is essential is Hashimoto's lymphoid thyroiditis. High titer antibodies against thyroglobulin are demonstrable by a variety of methods (*Roitt* and *Doniach*). At least three types of antigens can be demonstrated. One is the complement fixing associated with the microsomal fraction; the two others are associated with colloid, namely thyroglobulin and probably thyroid protease. The latter is demonstrable by immunofluorescence only. *Witebsky* produced autoimmune thyroiditis in experimental animals by injecting minced thyroid tissue with adjuvants. However, this experimental thyroiditis is self-limited. In humans apparently the unknown primary agent leads to a liberation of the normally concealed thyroglobulin and this results in the formation of "forbidden clones." The latter act on thyroid tissue, thus initiating a vicious circle which the patient for apparently constitutional reasons is unable to overcome.

The other autoimmune disease is rheumatoid arthritis. In this disease an abnormal "denatured" globulin is formed which being not recognized as self provokes the formation of an autoantibody. The latter denatures normal globulin and initiates thus again a vicious circle.

Finally, a few words on systemic lupus erythematosus. The L. E. factor found in this disease is an antinuclear antibody. It is located in both 7S and 19S fractions of gammaglobulin and has no species-specificity. There are probably at least three distinct antinuclear factors, namely: anti-deoxyribonucleo protein, -soluable nuclear protein, and -DNA. The constitutional probably genetic factor is evident from the ease with which patients with systemic lupus erythematosus produce a variety of isoantibodies. After blood transfusions several antibodies can be found in the serum which act on a variety of blood group factors.

Corticoids depress antibody formation. The relationship to cellular immunity is evidenced by the lymphopenic effect as seen in the Thorn-test. It explains the beneficial effects of corticoids in auto-immune diseases.

The therapeutic application of the new immunology is still in infancy. If a leukemic patient receives a sublethal whole body irradiation all his lymphoid and myeloid tissue, including the leukemic cells, becomes destroyed, being the most radiosensitive, and the patient is then tolerant to bone marrow transplantation. Thus, his own blood forming tissue is being replaced by that of the donor. There are still some difficulties in this procedure which have to be overcome, but it is to be hoped that in this way possibly combined with chemotherapy leukemia will become a curable disease.

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1963 M.M.A. Annual Session Reports

Report Of The Delegate To The American Medical Association

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As your Delegate I am happy to bring you a brief report of the 1963 annual meeting of the American Medical Association which was held in Atlantic City.

Mr. Kiser gave you the names of the officers while showing the film on Home Town Programs. The President this year is Dr. Edward R. Annis of Miami, Florida. Let me say that in Dr. Annis, we have a new type of a President in the AMA. The only connection this man really officially had with the AMA was that he was a member of the Speakers' Group for two or three years. He is a tremendous person, and I think that the AMA is going to feel the effect of his personality.

As it has been said, he is a southern Democrat. He is a wonderful speaker. He doesn't think the way our present administration in Washington thinks.

The President-Elect is a good New Englander by the name of Norman Welch. He has been the speaker of the House of Delegates for a number of years. He is very able. He comes from the same area as our President, but I assure you he doesn't think like our President does. I believe that Norman Welch will be a good President of the AMA.

There is one other thing in the make-up of the AMA this year and it is that the Trustees were increased from twelve to fifteen. This has been hashed over for a long while, but finally we now have fifteen Trustees instead of the usual number. We have three new Trustees, and the President-Elect now becomes one of the Trustees.

Let me just mention briefly how business is conducted in the AMA. This may be repetitious to many of you who know the "ins" and "outs" of the AMA very well, but there are new ideas that are brought in, in the form of resolutions, which are presented to the House of Delegates; they are brought in before the House and they are then assigned to the so-called Reference Committees. The Reference Committees are made up of five Delegates and there are eleven committees.

These Reference Committee hearings last all day. An AMA member of the House, or any AMA member may appear before these Reference Committees and give their ideas for or against any resolution that is brought up. These ideas are thoroughly hashed out in the Reference Committees. It is actually a democratic type of a procedure.

Then the Reference Committee Chairman brings in a resumé of the ideas that have been given in the Reference Committee before the House of Delegates, and the House votes upon the issues.

If you ever saw or heard a democratic type of discussion for and against, I think you would agree that these issues are well thought out. Not only are the resolutions brought before the Reference Committees, but anything that is from the Board of Trustees or from the Delegates of the previous year that has been discussed and has not been settled, is also brought before the Reference Committees and voted upon at that time.

Of course, it will be impossible for me to take up with you very many of the things that were brought up before the Reference Committees this year. I do think there are two or three things that are of interest to me and I am sure they might be of interest to you, and I am going to briefly discuss them. If there are any other issues which were brought up at the present AMA meeting which you, personally, are interested in, I will be glad to go over them and discuss them with you. If I don't have it on the end of my tongue, I have a black book and I can look it up for you and tell you what went on during the meeting.

Just a brief resumé, for your information, regarding the osteopathic situation, which was discussed with you this morning.

The number of States that have voluntary association with osteopaths at the present time are fifteen; the number of States who do not have voluntary association with osteopaths are thirty-five.

California, at the present time, is the only State where the D.O. and the M.D. have merged, and, as it was discussed this morning, some of them are in the process of considering this at the present time.

As you may remember, last year the Council on Medical Education and Hospitals made a ruling that any hospital having more than 75% of foreign interns for three consecutive years were in danger of losing their accreditation.

At that time, there were only two or three of us who got up and spoke against that. However, during the year, there has been a great deal of sentiment against that sort of thing, and that was defeated at this present AMA meeting. So that now, there is no ruling so far as the number of foreign interns you can have and still retain your accreditation.

The membership of the Council on Medical Education and Hospitals has been under a great deal of fire. One of their duties is the accreditation of hospitals and interns. As you know, a great number of our medical students are staying with hospitals affiliated with medical schools for their internship and residency, and the feeling has been that if we could clean out this Council on Medical Education and Hospitals, and remove from it the people who are associated with the medical schools, then we might remedy that to some degree.

It was brought out very clearly at this present meeting that a great many of our interns and residents were staying in those hospitals connected with the medical schools, on their own volition, and it was not due to people on this particular committee. It just happens that because of the scarcity of interns and residents there

just aren't enough interns and residents to go around and the community hospitals, naturally, are suffering.

There is nothing, really, that this group can do about that, except to keep our accreditation as solid as possible.

This year, there was a movement to keep at least six of the members, and I think there are eleven members on that committee, as general practitioners, so that the emphasis would be on the community hospitals. It was finally decided, after a great deal of discussion, that it was still better to take the best men we have available for that committee, and not limit it either to anyone who is a general practitioner or who is connected with the medical schools because that might cut down the ability of the people on that committee; therefore, it was so voted.

As to the payment of interns and residents, that of course, is something that we have been hearing about a great deal. That came up to this same committee which I have spoken about. There was no argument there, by the committee members or among the Delegates, but that the interns and residents should be paid more than they are being paid now. The only argument was: How?

The Council on Medical Education and Hospitals made a report in which they stated that the doctors should be vitally interested in seeing that interns were paid more. They suggested that the money might come from two or three different sources. One was that when an intern or a resident takes care of a private patient, a fee could be charged to that private patient for the work that the resident or the intern has done.

Another suggestion was that if that person had insurance in Blue Cross-Blue Shield, and the resident or intern assisted at surgery, then a share of that might be used to pay the intern or resident.

The third one was that the hospitals might increase the per diem charge enough to help pay the intern and the resident. These suggestions brought forth much controversy at the meeting. There were 400 doctors at the hearing and I guess every one of them spoke. They were all against any part of a doctor's fee going towards the payment of an intern or resident, or any part of any insurance fee going towards that. They felt that the Trustees of the hospitals should set up a method of paying the interns and residents.

Finally, they gave up on it and no recommendation was made. So what will happen is that the hospitals will go along just as they have been doing, working out their own programs, unless something else comes up in the future to try to settle it.

Of course, as far as our community hospitals are concerned, I think that competition in getting interns is going to play a big part in this, because after all a good many of our community hospitals have increased the pay of interns and residents because of the fact that they felt they had to do so in order to get anybody and to keep their accreditation. That, probably, is going to influence the payment of interns and residents.

Now, I am not going to go into any other business that was brought up. There were many other items and they were important but I just couldn't cover them in the time allotted.

Medic-Alert And The Medical Identification Program

Clyde I. Swett, M.D., Island Falls, Maine

Incorrect emergency treatment of people with hidden medical problems and dangerous allergies, has long worried police, firemen, first-aiders, and doctors.

There are:

2 million known diabetics, and

1.5 million epileptics — and these groups are often taken for drunks.

1 in 10,000 Caucasian males have hemophilia.

10 million cardiovasculars receive anticoagulants.

11 million arthritics/rheumatics are on ACTH, cortisone or hydrocortisone. (serious complications occur after shock or injury.)

10 per cent of people are allergic to horse serum (tetanus antitoxin).

5 per cent are allergic to penicillin — these last two are given routinely by most doctors.

Many are allergic to other drugs — as aspirin, codeine, novocaine, sulphas. When given they may do more harm than good.

Victims of cerebral palsy, heart trouble and epilepsy may receive wrong first aid treatment.

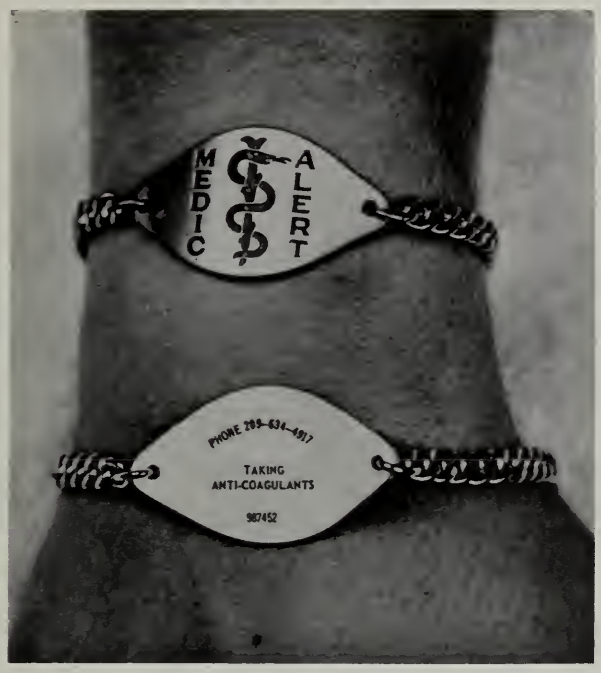
Skin divers that have "bends" are frequently mistreated.

Finally, it is estimated that 40 million people have hidden medical problems that confuse emergency treatment.

The first effort to have a medical identification program to save lives in the above situations, was the founding in 1953 of the MEDIC-ALERT FOUNDATION INTERNATIONAL by Dr. Marion Collins, Turlock, California. It is a non-profit, charitable, tax-exempt organization dedicated to educating and encouraging persons to wear on their person, identification of any medical problems that should be known in an emergency. It is urging doctors to advise people of the importance of wearing such identification at all times.

The Foundation distributed a metal emblem that has the staff of Aesculapius, symbol of the medical profession, and the words "Medic Alert" engraved and emblazoned in red on the face of the emblem. On the reverse side is engraved the immediate medical problem, such as "Diabetes," "Allergic to Penicillin," "Taking Anticoagulants," "Wearing Contact Lenses," and so forth.

The Foundation maintains a 24-hour central file, accepting collect phone calls from anywhere in the world, relaying information from the file pertaining to the



wearer. Each emblem is registered and the serial number is also engraved on the reverse side, as is the phone number of the central file. A percentage of each membership fee, which is a fee of $5.00 for all time and includes the complete service, is placed in a special fund to insure that the central file may be perpetuated.

More than 10,000 Americans now wear this life-saving alerting device. Its members not only receive the stainless steel or silver emblem, but the health history is filed at Turlock, together with the addresses of their own physician and nearest relative. In an emergency, a doctor or other authorized person can phone collect and be given vital information on the member's treatment — a 24-hour service.

Medic-Alert is now operating in five foreign countries and is registered in fifteen other foreign countries. Each branch is autonomous. The Foundation is conducting a continuous educational program to make the services known the world over. Organizations are alerting their personnel to look about the neck, wrist or ankle for the presence of the alerting emblem.

The Foundation has been endorsed in principle or in fact by state medical societies, county medical societies, state nurses associations, hospitals, departments of public health, law enforcement organizations, pharmaceutical associations, such organizations as the American Legion, Kiwanis Clubs, Federation of Womens Clubs, National Rehabilitation Association, the President's Committee for the Employment of the Handicapped, and so forth. Many are actively assisting in the educational program, and some provide emblems to the indigent.

Pressure recently mounted in medical circles that either the U. S. Department of H.E.W. or the A.M.A. establish a truly overall approach to this problem of emergency medical identification.

In April, 1961, representatives of major health agencies, American Hospital Association, National Health Council, National Youth Councils, labor and farm groups, police and armed forces authorities met in Chicago at the invitation of A.M.A.'s Committee on Emergency Medical Identification, created by the A.M.A. Board of Trustees. After two years study, this Committee reported to A.M.A.'s Trustees (March, 1962.) The founder of Medic-Alert was a member of the Committee.

In May, 1963, Dr. Blasingame, Executive Vice President of A.M.A., issued a notice regarding a new A.M.A. symbol offered for use of all emergency medical identification programs, for either cards or durable signal devices for the sake of uniformity. This symbol has been accepted by Medic-Alert and is to be stamped on its metal device.

Dr. Raymond White, Director of the Division of Environmental Medicine and Medical Services of A.M.A., stated on June 6, 1963 that the emblem is in the process of being registered through the A.M.A. legal department, and that the symbol is freely available for widespread use by those distributing alerting devices. A.M.A. plans to revise its own alerting card but does not plan to have any durable alerting device. It is recognized that a card alone is not sufficient since it may not be found, may be lost or destroyed, or mutilated by time. The A.M.A. Trustees plan to make a final report at the coming Fall Clinical Session of the A.M.A.

In replying to inquiries about the Medic-Alert Foundation, the Department of Health Education, A.M.A., replies in a form letter as follows:

"Thank you for your recent letter inquiring about the Medic-Alert Foundation. We welcome your letter since the American Medical Association favors the principle involved and is presently encouraging the use of alerting devices.

"Our staff believe that Medic-Alert contributes constructively to the objective of medical emergency identification. Also Medic-Alert appears to conform favorably with the criteria for alerting devices recommended by the Committee that recently reviewed these activities for the Association, although we must point out that the A.M.A. does not attempt to officially evaluate or endorse any particular device or program."

From the foregoing report on Medic-Alert, and the worthwhileness of the program, I recommend that the Maine Medical Association make its membership and the people of Maine aware of the Medic-Alert device for the emergency saving of lives, along with the identification card of A.M.A., until such time as a better or more highly recommended method becomes available.

/Mr. Speaker, I move the adoption of this report. (*This motion* was then duly seconded by several of the members present and was carried, unanimously.)/

This report has been published in accordance with a vote by the M.M.A. House of Delegates on June 23, 1963 at Rockland, Maine.

Maine Medical Association

SPECIAL COMMITTEES 1963-1964

Special Committees for 1963-1964 as appointed by the President, Ernest W. Stein, M.D., of Pittsfield.

Amy W. Pinkham Fund Committee

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Virginia C. Hamilton, M.D., South Harpswell
Albert M. Carde, M.D., 33 Elm St., Milo
Thomas A. Foster, M.D., 131 State St., Portland
Ella Langer, M.D., State House, Augusta

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2nd — Ralph A. Goodwin, Sr., M.D., 56 Denison St., Auburn
3rd — Edward K. Morse, M.D., 22 White St., Rockland
4th — Allan J. Stinchfield, M.D., P. O. Box 343, Augusta
5th — James H. Crowe, M.D., 57 Main St., Ellsworth
6th — Clyde I. Swett, M.D., 18 Sherman St., Island Falls

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Clifford W. Gates, M.D., 130 Main St., Gorham
Charles F. Branch, M.D., Central Maine Gen'l. Hospital, Lewiston

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Charles R. Glassmire, M.D., 58 Deering St., Portland
Paul A. Fichtner, M.D., 781 High St., Bath

Committee To Conduct A Study Of Maternal Mortality

Robert M. Knowles, M.D.,, 49 Deering St., Portland — Chairman
Eugene C. McCann, M.D., 49 Deering St., Portland
Stanley W. Kent, M.D., 42 Deering St., Portland

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Stanley B. Covert, M.D., Kingfield
William E. Schumacher, M.D., 14 Westwood Rd. MD "B", Augusta
Charles D. McEvoy, Jr., M.D., 186 State St., Bangor
Philip P. Thompson, Jr., M.D., 131 Chadwick St., Portland

Advisory Committee To Implement The Kerr-Mills Bill In The State Of Maine

Philip P. Thompson, Jr., M.D., 131 Chadwick St., Portland — Chairman
Carl E. Richards, M.D., 34 Winter St., Sanford
Harold N. Willard, M.D., Thayer Hospital, Waterville

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Maine Heart Association Notes

Pitfalls In Diagnosing Coronary Artery Disease

"Diagnoses always to be considered in dealing with a person . . . suspected of acute myocardial infarction are pulmonary embolism, dissecting aneurysm, idiopathic pericarditis, particularly in these days of viral infections, and acute spontaneous interstitial mediastinal emphysema. Common to both idiopathic pericarditis and acute myocardial infarction is the presence of pain, fever, leukocytosis, and electrocardiographic changes. The difference lies in the association with respiratory disease, and particularly the fact that the fever and the leukocytosis in benign pericarditis occur with the inception of the attack, whereas in acute myocardial infarction leukocytosis and fever occur usually after some 24 hours. . . . the electrocardiographic changes are very different. Similarly, we must exclude pulmonary embolism and . . . acute spontaneous interstitial mediastinal emphysema. A person may be condemned to a life of prohibition from all types of activity because of a mistaken diagnosis of acute myocardial infarction in the absence of any cardiovascular disease. I need not speak in detail . . . in regard to the differential diagnosis between upper abdominal conditions . . . nor of the xiphoid syndrome or Tietze's syndrome.

. . . Errors will be minimized, however, if one continues to consider the numerous possibilities in differential diagnosis, realizing that the correct diagnosis in obscure cases is usually made mainly by thinking of the diagnosis."

(Katz, Louis N. et al. Circulation, Volume 28, pages 274-287, 1963)

DEAN H. FISHER, M.D.
COMMISSIONER

State Of Maine

Department of Health and Welfare

Diabetes Detection Program

A Five-Year Report

RUTH T. CLOUGH, M.S. in Hyg.*

This year marks the five-year span in the life of the year-round program of diabetes screening carried on by the Department in conjunction with the X-ray screening program, through the Division of Tuberculosis Control. In light of the forthcoming national Diabetes Detection Week, November 17-23, when concerted action on the part of all medical and allied groups in the State will be taking place, some comments on the progress of the Department program appear to be both appropriate and timely.

Since the program began in January of 1959, 45,793 adult persons have been screened. Of this number, 752 persons with positive screening results have been referred to their physicians and of these, 138 have thus far been confirmed as new cases. There has been no follow-up reported on 110 of these referred cases. Of the confirmed new cases, age groupings are those which might be expected-predominantly the 45-64 year age group. Because the population screened has been heavily male, the data do not reflect the expected larger proportion of females to males in line with established findings in this direction.

As has been previously stated, the Department utilizes as screening equipment, a semi-automatic device known as the Hewson Clinitron. This is a relatively inexpensive, easily transported machine of considerable efficiency, capable of performing as many as 120 blood sugar determinations per hour. It is a modification of the well-known Wilkerson-Heftmann technique for glucose determination of capillary blood which identifies those who screen positive at a specified level. The level selected for such determinations in the program is 160 mg. per 100 ml.

In setting up the program initially, factors taken into account included consideration of the population to be screened, the source of this population, existing programs, relative costs involved, the convenience to the screenee as well as an acceptable number of referrals to the private physicians. These factors continue to be of concern. Over the five-year period the populations selected for screening have centered largely about the industries of the State; institutions (employees and patients); educational groups; government and legislative groups; Farm and Home Week visitors; visitors to two State Fairs-Bangor and Union, respectively. It is this last group which continues to show a high yield in general and it is anticipated that greater effort will be made in the future to reach more State Fairs and allied groups of rural character, such as women in the extension service, grange groups, and the like.

Health education has been a constant factor in the promotion of the detection program. Countless quantities of materials including posters, pamphlets, radio "spot" announcements, newspaper and house organ articles, etc. — all possible mass communications media-have been and are continuously being used in the development of the program. Public response is generally excellent, there being little reported difference between the numbers of persons who accept the diabetes test and the chest X-ray.

From observations made by the health educators involved in the community organization aspects of the program, it is learned that the continuous health education of the public from many sources is paying off handsomely. Persons questioned at the time of the brief history-taking, volunteer information freely to support these observations, or, through direct sampling surveys, it is found that the majority of persons questioned about the disease — its nature, symptoms, population at risk, etc. — give correct answers. At all times the promotional aspects of the program stress the need for routine physical examination to include a blood test for diabetes if possible.

For compiling the results of its activities in this program, the Department relies upon reports received from the private physician. Following the report of a positive screening test, three months of concerted effort is made on the part of the Division of Tuberculosis Control and the public health nurses in the field to get all positive screenees to their physicians as well as to get the final results reported by the physicians. At the end of the ninety day period, the findings are summarized for each

Continued on Page 222

*Health Education Consultant.

The Lady Governors of the Old Men's Home at Haarlem FRANS HALS, 1580/81-1666

DEPARTMENT OF HEALTH AND WELFARE — *Continued from Page 220*

project. These summaries continue to be helpful in pointing up additional needs or supporting known factors concerning the characteristics of the population screened.

In respect to the above, the Department received in June of 1962 from the Chief of the Diabetes and Arthritis Program, Division of Chronic Diseases, Public Health Service, a request for continued collection of some basic data capable of analysis and for use in a country-wide study of diabetes, and agreed to this involvement in light of the valuable information it eventually assured. From that time on the program has been designed toward the careful collection of a group of standardized questions obtained on each screenee, recorded on special port-a-punch cards to allow for manual punching. Thus, through IBM machine analysis, many cards can be combined and statistically organized into meaningful interpretations. The data recorded include: serial number, name and address of screenee, age, race, sex, height, and weight, blood relatives with diabetes, whether or not parent of baby weighing 9 pounds or over at birth, name and location of patient's physician, whether or not person himself has diabetes, type of group screened, place and date of test, screening results, etc.

A recent communication from the Chief of the Division expressed gratification for the data received and stated his plan for using these tabulations as examples of the procedure desired, for distribution to regional offices of the Service and for other State Health Departments.

As time goes on, it is planned that resulting studies from the tabulations made on similar programs throughout the country will reveal information of further value to programs of this nature.

In addition to the above described activity, the Department continues to cooperate with the Maine Medical and Maine Pharmaceutical Associations in carrying on the annual Diabetes Detection Drive on a planned, State-wide basis. Through its various divisions of service, the Department stimulates increased activities geared to diabetes detection, during the period of the campaign; assists with community organization; coordinates general program activities throughout the State; assists with the State-wide publicity campaign; prepares and executes the mechanics for the collection of testing data from many sources. Each year, too, the Department offers, in connection with the annual campaign, the services of its team of trained technicians, its equipment, and health education personnel, to one of the larger communities in the State for demonstration of mass diabetes screening and assistance with its respective detection program.

Certain identified needs of the present program remain unmet at the present time. One of the most important of these is the expressed need for a medical advisory group which can serve as consultant to the program. Such committee or group can, it is believed, provide valuable assistance to the Department in stimulating wider physician involvement, more professional education respecting new trends in the management of the disease, and most especially, the standardized diagnostic procedure so widely recommended by all recognized medical sources primarily concerned with this specialty.

M.M.A. SPECIAL COMMITTEE – 1963-1964 — *Continued from Page 218*

Cancer Committee

Irving I. Goodof, M.D., Thayer Hospital, Waterville — Chairman
Joseph E. Porter, M.D., 22 Bramhall St., Portland
Charles F. Branch, M.D., Central Maine Gen'l. Hospital, Lewiston

Advisory Committee To Secretary Of State And To The Bureau Of Motor Vehicles

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Milan A. Chapin, M.D., 237 Turner St., Auburn
Wilbur B. Manter, M.D., 1 Fern St., Bangor
Richard H. Dennis, M.D., 33 College Ave., Waterville

Committee To Study The Problems Of Long-Term Patient Care*

Peter W. Bowman, M.D., Box C, Pownal — Chairman
Harold N. Willard, M.D., Thayer Hospital, Waterville
George W. Wood, III, M.D., 156 No. Main St., Brewer

Committee On Rehabilitation*

John J. Lorentz, M.D., Hyde Rehabilitation Center, Bath — Chairman
John A. Woodcock, M.D., 35 Second St., Bangor
Edward G. Asherman, M.D., 131 Chadwick St., Portland

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Asa C. Adams, M.D., 68 Main St., Orono
Martyn A. Vickers, M.D., 268 State St., Bangor

Investment Committee**

Paul S. Hill, Jr., M.D., 323 Main St., Saco — Chairman
Adolphe J. Gingras, M.D., 99 Water St., Augusta
Asa C. Adams, M.D., 68 Main St., Orono

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* Appointed by the Council of the M.M.A. on 4/7/63

** Appointed by the Council of the M.M.A. on 9/15/63

Necrologies

ROMEO J. LEVESQUE, M.D.

1898 - 1963

Romeo J. Levesque, M.D., 64, of Frenchville, Maine died on July 14, 1963. He was born on July 31, 1898 in Frenchville, Maine.

Dr. Levesque graduated from St. Anne, P. Q. in 1922 and received his medical degree from Laval University, Quebec in 1926. In 1927, he located in Frenchville and practiced there until his death.

He was a member of the Maine Medical Association, the Aroostook County Medical Society and the American Medical Association.

DELBERT M. STEWART, M.D.

1875 - 1963

Delbert M. Stewart, M.D., 87, of South Paris, Maine, a past president of the Maine Medical Association, died on August 7, 1963. He was born in Wales, Maine on September 13, 1875, son of Josiah L. and Mary E. Murch Stewart.

Dr. Stewart graduated from Nichols Latin School in 1895, Bates College in 1899 and received his medical degree from Bowdoin Medical School in 1904. He interned as assistant surgeon at the National Soldiers' Home in Togus and began the practice of medicine in South Paris in 1905. He served as a Captain in the Army Medical Corps from 1917 to 1919 following which he returned to South Paris to resume his general practice.

He was a past president of the Maine Medical Association and the Oxford County Medical Society, having received a 50-year pin at the annual session of the Maine Medical Association in 1954 and a 55-year pin in 1959. He was also a member of the American Medical Association and was on the medical staff of the Stephens Memorial Hospital.

During World War II, he was medical examiner for the Oxford County draft board and served as county medical examiner from 1931 to January, 1963. He was a member and past president of the Norway-Paris Kiwanis Club, a member of the South Paris School Board, a secretary and director of the Paris Trust Company, a director of the Oxford County Savings and Loan Association and the South Paris Library Association. He was also a member, past master and trustee of the Paris Lodge, AF & AM and a former member of other Masonic bodies and the Knights of Pythias.

Surviving are a son, Attorney Gordon M. Stewart of South Paris, a daughter, Mrs. Donald K. Mason of South Paris, four grandchildren and four great-grandchildren.

EDWARD H. RISLEY, M.D.

1877 - 1963

Edward H. Risley, M.D., 85, of Prides Crossing, Massachusetts and Rome, Maine died on August 11, 1963. He was born in Waterbury, Connecticut on October 14, 1877, son of the late William Edward and Louise King Risley.

Dr. Risley graduated from Yale University in 1902 and received his medical degree from Harvard Medical School in 1906. He did postgraduate study at the Massachusetts General Hospital in 1908 and began the practice of medicine in Boston, Massachusetts, where he served as assistant surgeon at the Massachusetts General Hospital, clinical assistant for the Harvard Cancer Commission and anatomy instructor at Harvard Medical School, all in 1912; and was assistant surgeon at Huntington Memorial Hospital in 1915. In 1920, he moved to Waterville, Maine and practiced there until his retirement in 1957.

Dr. Risley, who was a past president of the Kennebec County Medical Association, was an Honorary member of that Association and of the Maine Medical Association, having received a 50-year pin in June, 1956 and a 55-year pin in 1961. He was also a member of the American Medical Association, the New England Cancer Society, a fellow of the American College of Surgeons and a past president of the New England Surgical Society.

Surviving are his widow, the former Ada Simpson; two sons, Dr. Thomas S. Risley of Prides Crossing and John H. Risley, a Wesleyan University professor in Middletown, Connecticut; a daughter, Mrs. James C. Duffus of Rochester, New York, and eight grandchildren.

JAMES N. SHIPPEE, M.D.

1902 - 1963

James N. Shippee, M.D., 61, of Winthrop, Maine died on August 15, 1963. He was born in Wanaque, New Jersey on July 13, 1902, son of the late Dr. David N. and Margaret Shippee. He graduated from St. Bonaventure College, New York and received his medical degree from Georgetown University School of Medicine, Washington, D. C. in 1933. He interned at Georgetown Hospital, Washington, D. C. and St. Joseph's Hospital, Paterson, New Jersey and served in the United States Marine Corps Reserves from 1930 to 1934.

Dr. Shippee began the practice of medicine in Wanaque, New Jersey in 1934 and moved to Winthrop in 1947 where he practiced until his death.

He was a member of the Kennebec County Medical Association, the Maine Medical Association, the American Medical Association, the Augusta General Hospital staff, International Academy of Proctology, American Society of Abdominal Surgeons and the Academy of Psychosomatic Medicine. He was a past president of the Winthrop Rotary Club, a member of the Augusta Lodge of Elks and of the Knights of Columbus in New Jersey.

Dr. Shippee was a former Maine State Police surgeon and Winthrop Health officer and received a medal for 15 years of continuous service as Kennebec County Selective Service examiner.

Surviving are his widow, Mrs. Luella Shippee of Winthrop and a sister, Mrs. Harriett DeVito of Riverdale, New Jersey.

CARL M. ROBINSON, M.D.

1886 - 1963

Carl M. Robinson, M.D., 77, of Waites Landing, Falmouth died on August 25, 1963. He was born in Portland, Maine on July 4, 1886, son of Frederick W. and Alice G. Merrill Robinson.

Dr. Robinson graduated from Portland High School, Bowdoin College in 1908 and received his medical degree from Harvard Medical School in 1911. He did postgraduate study

at the Massachusetts General Hospital and the Rhode Island Hospital. In 1916, he volunteered for service in the Harvard Medical Unit serving under the British Army in France and continued this service for the American Army after the U. S. entered World War I. He attained the rank of major.

Dr. Robinson was elected a fellow in the American College of Surgeons in 1920 and served from 1946 to 1949 on its board of governors. He became a member of the Founders Group of the American Board of Surgery in 1937 and was a member of the New England Surgical Society, having served as its president in 1940. In 1944, he became a fellow of the Academy of International Medicine. He served as chief of the surgical service at the Maine General Hospital from 1930 to 1947 and since his retirement in 1953 had served as a surgical consultant to the Maine Medical Center.

Dr. Robinson taught at the former Bowdoin Medical School and served from 1938 to 1962 as a member of the Board of Overseers of the college. Following his retirement from the board last year, he was elected an overseer emeritus of Bowdoin.

He was an Honorary member of the Maine Medical Association and Cumberland County Medical Society, receiving a 50-year pin in 1961. He was also a member of the American Medical Association, the American Legion, the Portland Club, the Portland Rotary Club and was a 32nd Degree Mason.

Surviving are his widow, Mrs. Grata Payson Robinson; a son, Dr. Hugh P. Robinson, Falmouth; four daughters, Mrs. Simeon B. Aronson, Cape Elizabeth, Mrs. William C. Burrage, Portland, Mrs. Maurice C. Orbeton, Coronado, California and Mrs. Wallace F. Moore, Old Lyme, Connecticut, and 18 grandchildren.

County Society Notes

CUMBERLAND

September 19, 1963

A meeting of the Cumberland County Medical Society was held on September 19, 1963 at the Eastland Motor Hotel in Portland, Maine. The meeting was called to order by the Vice-President, Eugene P. McManamy, M.D., in the absence of the President, Philip P. Thompson, Jr., M.D.

Drs. E. Charles Kunkle, Alfred Hurwitz, Richard A. Levy, Marvin C. Adams, all of Portland; Wilhelm H. J. van Deventer, Brunswick and Joseph R. Ridlon, Gorham were elected to membership in the society.

The A.M.A. program for increased use of tetanus toxoid was announced and emphasized by reading excerpts from the announcement of September 15, 1963 from the A.M.A. The A.M.A. program for Medic-Alert was announced and pamphlets from the organization were distributed.

The following physicians participated in a panel discussion on M.D. Recruitment, Aid and Placement: Dr. Charles W. Capron, Moderator; Drs. Robert E. McAfee, John F. Gibbons and Daniel F. Hanley.

James H. Bonney, M.D.
Secretary — Pro-tem

PISCATAQUIS

September 19, 1963

A meeting of the Piscataquis County Medical Society was held at Dr. Linus J. Stitham's camp at Sebec Lake on September 19, 1963. The meeting was called to order by the President, Francis W. Bradbury, M.D.

Ernest W. Stein, M.D., President of the Maine Medical Association, spoke in reference to the Maine Medical Education Foundation grants amounting to over $16,000.00 have been made to twenty-two medical students this year and it is felt that many of these students we help will come back to practice in Maine.

Mr. Richard F. Nellson, of the Associated Hospital Service of Maine, spoke relative to the Blue Cross-Blue Shield program.

The following officers were elected for the ensuing year:

President, Linus J. Stitham, M.D., Dover-Foxcroft
Vice-President, Isaac Nelson, M.D., Greenville
Secretary-Treasurer, Odd S. Nielsen, M.D., Dexter
Delegate to the Maine Medical Association House of Delegates: Linus J. Stitham, M.D. Alternate: Charles H. Lightbody, M.D., Guilford.
Board of Censors: Ralph C. Stuart, M.D., Guilford (3 yrs.); George C. Howard, M.D., Guilford (2 yrs.) and Norman H. Nickerson, M.D., Greenville (1 yr.)
Legislative Committee: Norman H. Nickerson, M.D. (3 yrs.); Harvey C. Bundy, M.D., Milo (2 yrs.) and John B. Curtis, M.D., Milo (1 yr.)

A motion was made by Dr. Lightbody and seconded by Dr. Nielsen that the Piscataquis County Medical Society contribute $100.00 to the Maine Medical Education Foundation which was approved unanimously.

Issac Nelson, M.D.
Secretary

KENNEBEC

September 19, 1963

The Kennebec County Medical Association met at the New Pioneer House in Augusta, Maine on September 19, 1963. The President, Brinton T. Darlington, M.D., called the business meeting to order following dinner.

A memorial resolution was read into the minutes on the death of Dr. James N. Shippee and a copy sent to Mrs. Shippee.

Dr. Eduardo A. Lopez of Waterville was elected to membership.

Dr. Darlington announced that Dr. Richard H. Dennis has been appointed county campaign chairman of "Operation Hometown" and asked that he be given complete cooperation on the part of the Association in carrying out this assignment.

The guest speaker, Dr. Frederick T. Hatch, Chief of the Arteriosclerosis Unit at the Massachusetts General Hospital, spoke on "Risk Factors as a Guide to the Possible Prevention of Coronary Disease in Young People."

Earle M. Davis, M.D.
Secretary

Deceased

Charles H. Patton, Jr., M.D., 11 McKeen St., Brunswick, September 28, 1963.

News, Notes and Announcements

State of Maine Board of Registration of Medicine
Secretary — George E. Sullivan, M.D.
Waterville, Maine

Physicians Licensed to Practice Medicine and Surgery in the State of Maine
June 25-27, 1963

THROUGH EXAMINATION

Iradge Argani, M.D., Fordham Hospital, Bronx, N.Y.
Nihat M. Bulbulkaya, M.D., Pilgrim State Hospital, Long Island, N.Y.
Cor De Hart, M.D., 681 Clarkson Ave., Brooklyn, N.Y.
Carmelo S. Fabrigar, M.D., Gagetown Station Hospital, Oromocto, N.B., Can.
Harald Giebel, M.D., 7646 So. 14th St., Phoenix, Ariz.
Julia E. Halasz, M.D., 240 W. Walnut Lane, Philadelphia, Pa.
Christos Koutras, M.D., Crease Clinic, Essondale, B.C., Can.
Heinz-Edzard Koehnlein, M.D., 415 Rushmore Ave., Plainfield, N.J.
Harry Lai, M.D., 382 Central Park West, New York, N.Y.
Dobrosav Matiasevic, M.D., 321 East 78th St., New York, N.Y.
Pen-Ming Lee Ming, M.D., Peter Bent Brigham Hospital, Boston, Mass.
Dominic Moore-Jones, M.D., Washington Univ. Medical School, St. Louis, Mo.
Willibald Nagler, M.D., 436 E., Apt. 1G, New York, N.Y.
Mohamad Nickchehreh, M.D., Freedmen's Hospital, Washington, D.C.
Virgilio A. Reyes, M.D., 2125 Marston Terrace, Philadelphia, Pa.
David A. Rideout, M.D., Grand Falls, N.B., Can.
Edward J. Riseborough, M.D., 275 Charles St., Boston, Mass.
Araminta M. Rodriguez, M.D., 393 State St., Bangor, Me.
Ali Sarreshtedar-Emrani, M.D., Jewish General Hospital, Montreal, Can.
Arnold J. Sattler, M.D., Cabell Huntington Hospital, Huntington, W. Va.
Karl F. Stammen, M.D., Plymouth County Hospital, Hanson, Mass.
Kunihiko Suzuki, M.D., Albert Einstein College of Medicine, New York, N.Y.
Kinuko Suzuki, M.D., 1752 Seminole Ave., New York, N.Y.
So-Khim Tan, M.D., 1065 Bois Franc Rd., Montreal, P.Q., Can.
Ramon K. Tan, M.D., 462 Grider St., Buffalo, N.Y.
Janusz F. Winiarski, M.D., St. Vincent's Hospital, Worcester, Mass.

THROUGH RECIPROCITY

Modhaffer K. Al-Chokhachy, M.D., Newton-Wellesley Hospital, Newton Lower Falls, Mass.
John A. Arness, M.D., 59 Lawrence Terrace, Portsmouth, R.I.
John C. Bjorn, M.D., Hampden, Me.
William C. Bromley, M.D., 24 Middle St., Eastport, Me.
William G. Bush, M.D., North Haven, Me.
William E. Callahan, M.D., Portland, Me.
Robert J. Forcier, M.D., Winter Harbor, Me.
William C. Harvey, M.D., Caribou, Me.
James E. Hebert, M.D., 2221 Alabama Ave., Great Lakes, Ill.
Emery B. Howard, Jr., M.D., 38 Summer St., Rockland, Me.
John T. Kennedy, Jr., M.D., Brunswick, Me.
George M. Malouf, M.D., Dark Harbor, Me.
John J. McLaren, M.D., Brunswick, Me.
Bruce M. Rodenberger, M.D., Vinalhaven, Me.
George B. Shaw, M.D., Jonesport, Me.
Barbara B. Stimson, M.D., Owl's Head, Me.
Cornelius A. Toner, M.D., Portland, Me.
Bruce Trembly, M. D., Waterville, Me.
Walter M. Uhler, M.D., Pine Creek Rd., Chester Springs, Pa.
John B. Wilder, M.D., 106 Canterberry St., Presque Isle, Me.
Joseph B. Wolffe, M.D., Deer Isle, Me.

Maine Health Mobilization Stateline Training Course

A training program on "Emergency Health and Medical Services" will be held on October 29-30, 1963 at the State Office Building, Room 105-114 in Augusta, Maine.

This course is designed to show how Maine can be mobilized to protect the health of its people in a disaster situation.

Topics of interest for the two-day session will include:

Tuesday, October 29

Orientation to Health Mobilization in Maine – Clyde I. Swett, M.D.

Medical Aspects of Nuclear Weapons – Lt. Col. Edward Marks, MSC

Human Behavior in Disaster – Lt. Col. William E. Mayer, MC

Mass Casualty Care and Expended Function Training of Para-Medical Personnel – Thomas G. Nelson, M.D.

Wednesday, October 30

The Disaster Environment and Shelter Living – Warren S. Dobson, M.P.H.

A Community Emergency Health Service; Knox County General Hospital, Rockland, Maine – Edward K. Morse, M.D.

Medical Disaster Planning: The Regional Concept Including the Civil Defense Emergency Hospital – Thomas G. Nelson, M.D.

The Civil Defense Emergency Hospital – Demonstration by 333rd General Hospital USAR – Col. Harry M. Wilson, MC, USAR

For further information contact: John T. Konecki, M.D., Chairman, Disaster Care Committee, St. Mary's General Hospital, Lewiston, Maine.

Central Maine General Hospital, Lewiston, Maine Refresher-Postgraduate Course in Streptococcal Diseases, Rheumatic Fever, and Chronic Valvular Heart Disease

November 6, 1963 – Streptococcal Infections and Diseases. Rheumatic Fever.
Louis Weinstein, M.D.

November 13, 1963 – Rheumatic Fever and Rheumatic Heart Disease, Complications and Treatment.
David Littman, M.D.

November 20, 1963 – Rheumatic and Valvular Heart Disease, Surgical Aspects. Cardiac Catheterization.
Ralph A. Deterling, Jr., M.D.

November 27, 1963 – Chronic Valvular Heart Disease; Congestive Heart Failure; Drugs Commonly Used in Treatment; Arrhythmias; General Discussion of the Use of the Electrocardiograph.
David Littman, M.D.

This course will comprise 12 hours and is designed to be of value to all practicing physicians. Application has been made to the American Academy of General Practice for credit.

All lectures will be held in Hiebert Hall, Central Maine General Hospital from 3:00 to 6:00 p.m. Fee, $20.00.

Retirement Program for New England Physicians

A Retirement Program has been established by the Council of the New England State Medical Societies. The New England Physicians' Retirement Program consists of various plans which can be taken singly or in combination. The program has been planned to provide Equity Funding through participation in the Beacon Investing Corporation and purchases of guaranteed annuities from the New England Mutual Life Insurance Company.

For information regarding participation in the plan write to: New England Physicians' Retirement Program, The National Shawmut Bank of Boston, Plan Accounts Department, 40 Water Street, Boston, Massachusetts, 02106.

Department of Health and Welfare
Division of Maternal and Child Health
Including Services for Crippled Children
(By Appointment Only)

Orthopedic Clinics

Augusta – Augusta General Hospital
1:00 p.m.: Dec. 26
Bangor – Eastern Maine General Hospital
9:00 a.m. and 1:00 p.m.: Nov. 21
Houlton – Aroostook General Hospital
9:00 a.m.: Nov. 12
Lewiston – Central Maine General Hospital
9:00 a.m.: Oct. 18, Nov. 15, Dec. 20
Portland – Maine Medical Center
9:00 a.m.: Nov. 4, Dec. 9
Presque Isle – Arthur R. Gould Memorial Hospital
9:00 a.m. and 12:30 p.m.: Nov. 13
Rockland – Knox County Hospital
1:30 p.m.: Nov. 21
Rumford – Community Hospital
1:30 p.m.: Dec. 18
Waterville – Thayer Hospital
1:30 p.m.: Oct. 24

Cardiac Clinics

Bangor – Eastern Maine General Hospital
9:00 a.m.: Oct. 25, Nov. 8-22, Dec. 13-27
Portland – Maine Medical Center
9:00 a.m.: Every Friday (holidays excepted)

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The Management Of Injury To The Liver, Spleen And Pancreas

Major Michael M. Duffy, MC, USA*

Introduction

Injuries to the liver, spleen and pancreas can occur as a result of either penetrating or non-penetrating abdominal injuries. The penetrating type of injury is most common in war and, though gravely serious, it is often not so perplexing a problem as those of the non-penetrating type since exploration is categorically indicated. Non-penetrating wounds are more common in peacetimes, predominately because of the steering wheel type of injury. The diagnosis of internal injury here is more difficult, because the symptomatology often is less discrete and may be hidden by other factors such as ethanol intoxication, or associated head trauma. It should be remembered that the advent of atomic warfare, with the shock effect of these modern weapons, may increase the incidence of this type of injury.

Treatment may be divided into two phases, resuscitation and surgery. Resuscitation refers to the treatment of the body as a whole. A wound is dynamic in nature, not a static entity, and in turn affects the whole organism. Evaluation of all injuries is of paramount importance so that early treatment can be directed at the most treatening. Establishment of a patent airway is the first consideration. Next is shock, which must be treated aggressively, and should always be considered as due to loss of blood until proven otherwise.

Early reparative surgery is as equally important, though a somewhat less urgent phase. If possible, shock should be controlled prior to operation; however, if this cannot be achieved, operation should not be delayed. The skin should be prepared over a wide area and generally a paramedian incision selected, keeping in mind that "T" extension can be made without delaying healing if necessary for adequate exposure. It should, however, be remembered that a midline incision is the fastest, and is attended with the least blood loss in the case of dire emergency. Transverse incisions are avoided as they take more time and blood loss is greater. The incision should not include the wounds of entrance and exit if avoidable. Multiple intra-abdominal injuries must be treated in the order of their life endangering potentiality.

Hepatic Injuries

The liver is the largest and most superficial abdominal organ and hence is the most commonly injured. In the case of penetrating wounds it must be remembered that they may occur via the thoraco-abdominal route. The over-all mortality of abdominal wounds involving the liver has come from 66% in WWI to about 15% in the Korean War. Mortality from uncomplicated hepatic wounds during the Korean War was only 9%. This improvement is due not only to improved antibiotics, anesthesia and surgical techniques, but also to more rapid evacuation and early operation.

Diagnosis is not always exact and often small hepatic injuries are found when the abdomen is explored because of symptoms caused by injury to some other organ. The

*Chief, General Surgical Service, U. S. Army Hospital, Ft. Devens, Massachusetts

symptoms of isolated hepatic injury are those of hemorrhage into the abdominal cavity, shock with a silent rigid abdomen. There will be generalized tenderness, more marked in the right upper quadrant, with rebound tenderness. Pain may be referred to the right shoulder and is aggravated by compression of the right costal margin. A wound of the inferior surface of the liver may not cause shoulder pain if the undersurface of the diaphragm is not irritated. Drainage down the right gutter may cause right lower quadrant signs with right rectal fullness and tenderness. Slow, localized, loculated hemorrhage may provide a right upper quadrant mass.

The treatment of all hepatic wounds is operative, and embodies the basic principles of hemostasis, debridement and repair. Small lacerations of the liver frequently will have stopped bleeding at the time of exploration and liver suture is optional. If hemostasis is not complete, or suture is desirable, mattress sutures of large sized absorbable material should be used, and can be placed over a buttress of absorbable sponge to avoid cutting through liver tissue. A drain should be placed in the area of the wound and in dependent drainage areas, such as the subdiaphragmatic space and Morison's pouch. Small hematomas should be evacuated and drained after hemostasis has been achieved.

Larger lacerations should be adequately debrided of all nonviable tissue. The extent of debridement often is difficult to ascertain at the time of surgery, especially in the case of high velocity missile wounds. It is probably better to err on the side of more radical debridement, as the liver has marked powers of regeneration, and as little as one tenth of the total hepatic mass has been shown to be capable of sustaining life. Leaving behind nonviable tissue predisposes to delayed hemorrhage, bile peritonitis and systemic toxicity resulting from retained necrotic tissue.

Hemostasis and bile stasis should be attained over the surfaces of the wound by ligation of individual ducts and vessels with heavy absorbable material. Following this, absorbable packs such as Gelfoam® or Oxycel® should be placed over the raw surfaces and sutured securely with heavy absorbable material. Ribbon gut may be used to achieve sufficient tension without cutting through the parenchyma. Autografts of omentum or muscle may be effective if absorbable packs are not available. If these methods fail, a nonabsorbable pack may be used as a last-line of defense.[1] Delayed complications such as hemorrhage and sequestration are common with the use of packs and, if possible, a layer of absorbable material should be placed between such a pack and the liver parenchyma. It should be remembered that pressure adequate to produce hemostasis may also produce necrosis.

Adequate drainage, as previously mentioned, is mandatory and with deep lacerations a drain should be placed within the parenchyma to prevent hemobilia. Drains are not removed until drainage is minimal and then intraparenchymal drains are advanced with the others.

COMPLICATIONS[2]

1. Hemorrhage
   a. Uncontrolled bleeding from wound, continuous, delayed, or intrahepatic
   b. Hemobilia
   c. Defective coagulation
2. Avascular necrosis or disrupted liver tissue
   a. Retained fragments
   b. Sequestration
   c. Pulmonary embolism of liver tissue
3. Infection
   a. Without abscess
   b. Abscess
      1. Subphrenic
      2. Hepatic
      3. Elsewhere in abdomen
   c. Wound infection
4. Biliary drainage
   a. Bile drainage
   b. Bile pleuritis
   c. External biliary fistula
   d. Intrahepatic bile cyst
5. Miscellaneous
   a. Shock
   b. Cerebrovascular accident
   c. Pulmonary complications
   d. Cardiac complications
   e. Hepatic failure
   f. Lower nephron nephrosis
   g. Hepatorenal syndrome
   h. Wound disruption

Most of these complications are self-evident but several deserve emphasis. Infection is common and has been reported in about 25% of hepatic injuries. Contamination is introduced in three ways: First, by the inflicting agent, second, by growth or organisms harbored in the liver, and third, by contamination from associated visceral injuries, especially the bowel. Adequate prophylaxis with antibiotics is indicated.

Hemobilia occurs occasionally with deep parenchymal lacerations and is caused by hemorrhage and necrosis into a central cavity, perpetuating more hemorrhage, bile drainage and necrosis. It may be prevented with the use of parenchymal drainage, and has been reported to have a mortality rate of 50%.[3]

Pleural reaction at the base of the right lung is the rule and generally produces a degree of right hydrothorax. If the diaphragm is injured, closure with chest and subphrenic drainage are mandatory.

Bile peritonitis should not occur to a marked degree with adequate drainage, but if it does occur, it should be remembered that it causes loss of sodium chloride into the peritoneal cavity, and compensatory administration of this electrolyte is necessary.

Autotransfusion should never be used with hepatic wounds because of the mixture of bile with intraperitoneal blood.

Injuries to the biliary tract are infrequent and the treatment is indicated by the type of injury. Small wounds of the gallbladder may be treated by closure with nonabsorbable sutures. More extensive wounds are treated with cholecystectomy if the patient's general con-

dition permits. Drainage of the area should not be neglected.

Injuries to the common bile duct or hepatic ducts should be treated by anastomosis and "T" tube drainage if feasible. Avulsions of portions of the ducts, if they cannot be reconstructed, are treated by anastomosis of the proximal portions to the gastrointestinal tract, preferably the duodenum, or proximal small bowel. If this is impossible a Roux-en-y limb may be constructed to achieve continuity with the bowel. Cholecystogastrostomy may be useful for distal injuries to the common duct.[4]

Splenic Injuries

The incidence of splenic injury with abdominal trauma has been variously quoted from 6 to 36%. The mortality from such injuries is also variously quoted from 10 to 35%. Without surgery the mortality is estimated at 75 to 100%.[5]

Rupture of the spleen most frequently occurs after blunt trauma to the abdomen or lower chest. Penetrating wounds are less frequent and inadvertent damage during surgery may occur. Pathologic conditions of the spleen may predispose it to rupture. Because of its thin capsule and the friability of the remainder of the organ, repair of injury is contraindicated and splenectomy is the treatment of choice.

Diagnosis is made by a history of trauma though spontaneous rupture has been reported and signs of intraperitoneal hemorrhage. Trauma is usually blunt and to left upper abdomen or lower posterior chest. Fracture of lower left ribs is associated in 10 to 20% of cases. If the splenic pedicle is torn as with falling injuries, or penetrating wounds, shock may be marked, but with smaller lacerations, shock may not be so severe. There is generalized abdominal pain more severe in the left upper quadrant. There may be pain radiating to the left shoulder, aggravated by pressure over the left costal margin or the left scalenus anticus muscle. Pain is aggravated by deep breathing and breathing is predominantly thoracic.

There is generalized abdominal tenderness with rebound, more marked in the left upper quadrant, and rectal tenderness often is present. There may be abdominal rigidity and absence of peristalsis depending on the amount of intraperitoneal hemorrhage. A left upper quadrant mass may be palpable. Temperature and pulse are elevated, and there usually is a leukocytosis with a left shift. X-ray may reveal a serrated appearance to the greater curvature of the stomach if hemorrhage has occurred into the gastrosplenic ligament. Otherwise, there may be increased density in the left upper quadrant of the abdomen, or downward displacement of the stomach bubble by local accumulation of blood.

In about 15% of cases the onset of symptoms will not occur until two to fourteen days after trauma. If it occurs 48 hours after injury, it is classified as delayed rupture of the spleen. The etiology of this condition is postulated as a small subcapsular hematoma, occurring at the time of injury, which gradually increases until rupture through the capsule occurs. This possibility always must be carefully considered as one-half of such patients will expire within one hour of the onset of secondary hemorrhage.[6]

Treatment is surgical and consists of splenectomy as soon as the diagnosis is made. Care is taken to avoid trauma to the adjacent pancreas, and to achieve hemostasis. Drainage is recommended because of possibility of drainage from the tail of the pancreas.

Complications are those of any abdominal surgery and, in addition, the autotransplantation of splenic tissue or splenosis can occur within six months, and can be differentiated from accessory spleens as the capsule and blood supply are derived from local tissues and trabeculation is incomplete.[7]

There may be a low grade fever for several days postsplenectomy. Within the first week thrombocytopenia has been reported, with interference with the blood clotting mechanism. This is followed by thrombocytosis and thrombotic phenomena have been reported necessitating anticoagulation. Some degree of left hydrothorax is also common.

Pancreatic Injuries

Fortunately pancreatic injuries are uncommon, representing 1 to 2% of all abdominal injuries, but when they do occur, they are often difficult to manage. The pancreas is well protected; posteriorly by the vertebral bodies, paraspinous muscles, and twelfth rib with its muscular attachments, laterally by the ribs and abdominal muscles, and anteriorly by the abdominal wall and other viscera. Its anatomy presents, however, three disadvantages. First, it lies across the bodies of the twelfth thoracic and first lumbar vertebrae, which make it particularly susceptible to transverse laceration at this junction of the head and body, when blunt trauma is inflicted anteriorly, especially if the abdominal musculature is relaxed at the time of impact. Second, its relatively fixed position does not allow it to be pushed aside in the instance of penetrating wounds. Thirdly, its proximity to many vital organs, re: duodenum, spleen, stomach, left kidney, and biliary tract, predisposes it to inadvertant injury during surgical procedures involving these other organs.

Solitary injuries to the pancreas are rare and often the abdomen is opened because of symptoms caused by injury to other viscera. Exploration of the pancreas should, however, never be neglected in cases of abdominal trauma. The diagnosis of massive pancreatic injury is not often made preoperatively as its symptoms and signs are those of massive intraperitoneal hemorrhage. The clinical aspects of less severe non-penetrating injury are more perplexing. The patient may or may not have abdominal pain at the time of injury, and often there is a remission of 24-72 hours or more before the onset of more severe pain. When it recurs it is unusually se-

vere and associated with vomiting. The pain is steady, upper abdominal, or generalized, and often radiates to the back or shoulders. There is abdominal tenderness, most marked in the left upper quadrant; rebound tenderness is present, and a mass may be palpable. The pulse, temperature and white blood count rise. Shock is not necessarily present unless a large vessel has been lacerated. Serum amylase may be elevated, but returns toward normal early, followed by a less transient rise in serum lipase. Blood glucose may be elevated. Serum calcium may be normal as fat necrosis is less common in traumatic pancreatitis than in nontraumatic. Peritoneal tap, though not routinely advised, may reveal a thin, blood tinged fluid with an amylase of 5000 to 50,000 units. A rising titer is more significant than an isolated elevation. X-ray may reveal a degree of localized ileus, the so-called "Sentinel Loop" in the left upper quadrant or center of the abdomen.

Judicious laparotomy is generally indicated, though some authors have advocated conservative management,[8] here outlined as it also pertains to postoperative management.

1. Reduction of pancreatic secretion:
   a. Starvation, to diminish gastric secretory activity and hence humoral stimulation of the pancreas (Secretin).
   b. Nasogastric suction, to decrease secretion and relieve ileus.
   c. Parasympatholytic drugs, to block vagal stimulation:
      (1) Atropine, 0.4 mg q 2 h, or
      (2) Banthine® or Probanthine,® 50 mg IV q.i.d.
2. Reduction of pain:
   a. Demerol,® in appropriate dosage. Morphine sulfate is contraindicated as it may cause spasm of the sphincter of Oddi and this alone has been shown to raise the serum amylase.
   b. Continuous epidural block, to interrupt visceral afferent fibers.
3. Prevention of abscess or secondary infection, by the use of antibiotics.
4. Blood or serum albumin, for replacement and to combat systemic proteolytic processes.
5. Control of body electrolytes, calcium administration may be necessary.
6. Control of hyperglycemia, insulin may be necessary.

Surgical management consists of control of hemorrhage, maintaining continuity of pancreatic ducts, and drainage.

1. Contusion, evidenced by edema and punctate hemorrhage, is best managed by recognition and conservative postoperative management.
2. Small hematomas are best managed by evacuation and drainage of the area.
3. Small lacerations may be treated by suture with mattress suture of nonabsorbable material and drainage.
4. Major laceration of body and tail, are treated by amputation of the distal tissue, careful ligation on individual ducts and vessels with nonabsorbable ligatures, and closure of the pancreatic stump with nonabsorbable mattress sutures.
5. Small lacerations of the head of the pancreas, may be treated by ligation of individual ducts and closure, providing the duct of Wirsung can be shown to be intact.
6. Large lacerations of the head of the pancreas, must always be treated by re-establishing the continuity of the duct of Wirsung with the gastrointestinal tract. Incisional lacerations of the duct of Wirsung may be treated by primary anastomosis. More extensive injuries are treated by mucosa anastomosis with the duodenum or small bowel, or implantation of the cut end of the gland into the small bowel.[9]

Adequate drainage must not be neglected, and usually can be achieved through the gastrocolic ligament, though the placement of a drain behind the mobilized duodenum may be advisable in injuries to the head of the pancreas.

Complications following pancreatic injury are unfortunately the rule rather than the exception.

1. Acute or chronic pancreatitis is best managed medically.
2. Hemorrhage, immediate or delayed, is treated by drainage and replacement, and surgery if necessary.
3. Pancreatic abscess is best treated by prevention, but if once developed, it must be drained.
4. Pancreatic calculi are treated conservatively and operated upon only if necessary.
5. Malnutrition is treated by oral supplementation with pancreatin, 8 grams daily, or use of drainage from pancreatic fistula, if present.
6. Diabetes mellitus, usually develops after severe pancreatic injury and is managed with insulin. Recovery may be expected unless severe chronic pancreatitis ensues.
7. Pancreatic fistula, is the most common postoperative complication, and will usually close spontaneously in 6 to 8 weeks. Secretions which may amount to a liter or more daily are very irritating to the skin, necessitating the use of 5% tannic acid ointment and sump drainage for skin protection. Careful electrolyte management is necessary, and nutrition must be maintained. Surgical correction may be necessary and is achieved in several ways. Most important is re-establishment of the continuity of the duct of Wirsung and the gastrointestinal tract. The fibrous fistula tract may be skeletonized and anastomosed to the gastrointestinal tract. If neither of these can be achieved, the whole distal organ may be anastomosed to the small bowel.[10]
8. Pancreatic pseudocyst is a serious complication and may follow relatively minor trauma. When a small hematoma is produced there may be liberation pancreatic enzymes. Pancreatic trypsin is activated by the damaged tissue, and the clot digested, forming an enlarging cyst by progression of digestion and necrosis. Ultimately, as more pancreatic tissue is destroyed, or a large duct obliterated, secretion tends to diminish and progression is slowed; nevertheless, these cysts may become quite large and symptomatic.

   Treatment is surgical, with the excision of small cysts if located distally, and distal pancreatectomy is usually necessary. If this cannot be done, it may be practical to anastomose the cyst to the small bowel or stomach internally. Otherwise, external drainage, or marsupialization, with enzymatic debridgement using streptodornase, and frequent irrigation may be effective.[11]

Summary

1. A discussion of injuries to the solid abdominal viscera has been presented.
2. Resuscitative measures are of greatest importance but operative intervention should be used if indicated.
3. Shock is due to blood loss until proven otherwise.
4. All liver injuries should be treated by adequate debridement, hemostasis and drainage.

Continued on Page 236

A Teaching Machine For Diabetic Patients

A Study Report*

HIRAM H. NICKERSON

USES OF TEACHING MACHINES IN MEDICINE

Hundreds of thousands of Americans have been introduced in recent years to a remarkable new form of pedagogy known as automated teaching or programed instruction.

Although the first machines were made in the 1920's, it was not until 1957 that the field of programed instruction began to grow, and it is growing rapidly.

Today, commercially produced machines and programs are being used in some 2,000 schools. Elementary students are being taught spelling and long division by programed text. Colleges are teaching Russian and Logic by means of this new procedure. Mechanics have been taught to read blueprints, telephone operators to route toll calls and engineers to use analogue computers. A recently compiled directory lists 137 manufactures and publishers in the field.

It is not surprising, therefore, that the field of medicine also should want to know the possible applications teaching machines might have for it. I will mention only a few uses which are currently being tried.

Dartmouth College Medical School, operating with a grant from the Carnegie Corporation, is conducting a study on teaching parasitology to medical students and is planning programed lessons on the autonomic nervous system and gross anatomy.

The University of Illinois College of Medicine in Chicago this fall will begin studying the comparative merits of programed instructional material and the standard lecture approach in physiology with its freshmen medical students.

The Department of Nursing Education at Columbia University Teachers College has been sufficiently favorably impressed with the results of programed instruction on "Asepsis" that material is now being prepared to round out a course on The Fundamentals of Nursing under a Kellogg Foundation grant.

Schering Corporation is experimenting with educating their detail men about company products, using programed instruction prepared in linear book form.

This morning it is my pleasure to be the representative from the Medical Foundation to report to you on another possible application teaching machines may offer medicine; as a means of teaching diabetic patients to understand this illness and to take care of themselves.

The Medical Foundation became involved in this study when it was asked by the Diabetes and Arthritis Program of the United States Public Health Service to conduct a preliminary field test and prepare a report for them. This field test was conducted during the summer of 1962.

CHARACTERISTICS OF PROGRAMED INSTRUCTION

Before reporting on our teaching machine studies, I want to make a few brief comments on what programed instruction is. I'll preface by quoting a limerick.

"T'was said by an eminent dean
By the use of the teaching machine
That Oedipus Rex could have learned about sex
Without having to bother the Queen."

All programed instruction is based on these three psychological learning principles:

1. It presents information in small, logical steps.
2. It requires the learner to respond to the information and immediately corrects or reinforces his reply.
3. It allows the learner to go at his own pace. For some this will be faster than it is for others.

Two principal approaches to programed learning are being used at this time. One, developed by Professor Skinner of Harvard University, is the linear approach. The other, developed by Dr. Norman Crowder of United States Industries is the branching approach. The linear program has one sequence of steps that everyone must follow. By contrast, a learner who makes a mistake while going through the branching program is shunted off the main line and onto a branch where he gets additional instruction. Another difference is that Skinner's programing requires that the learner write down the correct answer while Crowder's programing is a problem-solving approach which provides multiple-choice questions.

THE MARK II AUTOTUTOR

The teaching machine which the Diabetes and Arthritis Program asked the Medical Foundation to report on was the Mark II AutoTutor, manufactured by United

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*This paper was delivered at the 110th annual session of the Maine Medical Association. The paper is based on an unpublished report prepared by the Medical Foundation, Inc. under contract to the Diabetes and Arthritis Program, Division of Chronic Disease, U. S. Public Health Service.

The Medical Foundation is a voluntary health agency located at 227 Commonwealth Avenue, Boston, supported financially by several United Funds and is unique because its program is not limited to any specific disease or portion of the anatomy but is concerned with all health problems.

Mr. Nickerson is an associate health educator of the staff of the Medical Foundation.

FIG. 1. The Mark II AutoTutor manufactured by U. S. Industries.

States Industries, Inc., which was the branching system with the multiple-choice questions.

The technical script was prepared by Dr. Arthur Krosnick, a private practitioner specializing in diabetes and also diabetes coordinator for the New Jersey State Department of Health.

While in appearance the Mark II AutoTutor looks like a small TV set, technically it is a special 35 mm. film projector with a rear view projection screen. It requires little space and is portable. To the right of the screen are a row of 9 selector buttons labeled from "A" through "I" and a return button labeled "R." The learner reads a frame, or image, containing information and including a question with three possible answers. If he selects the correct answer, and pushes the corresponding button, the machine automatically advances the film to the next unit of information which includes the statement that the chosen answer is correct. If the individual makes an incorrect choice, he is told why the answer is incorrect and is instructed to push the "R" button that brings back the original information for restudy and a second try at the answer.

The Need for Improved Patient Education

The Diabetes and Arthritis Program of the Public Health Service became interested in the potentials of programed instruction as a possible procedure to meet the great need to improve the quantity and quality of diabetes education. Control of diabetes is not as good as it might be, with a major reason being lack of information to the patients, particularly about diet.[1]

From the beginning of their investigation of automated instruction, it was never considered that the human teacher, be it physician, nurse or dietician, would be replaced by a machine. Rather, the purpose was to find a method that could be used where no method of patient education existed or where the automated teaching would conserve increasingly scarce professional time.

The contract awarded to the Medical Foundation was for the purpose of conducting an initial field study ". . . to find out if the teaching machine is a useful means by which diabetic patients can learn information about their disease. . ."

In addition to information regarding nutrition the patient also receives instruction in types of medication, proper use of a hypodermic syringe, and the importance of exercise, hygiene and foot care.

The Study With Patients

One hundred eighty-four diabetic patients from 6 centers were contacted on a random selected sample to participate in the field study.

1.	Joslin Clinic	38
2.	Clara Barton Camp	25
3.	Joslin Camp	17
4.	Boston City Hospital	14
5.	Boston Dispensary	8
6.	Peter Bent Brigham Hospital	4
	Total	106

Incomplete: 78 of the 184 patients did not complete the study, providing useful information which will be discussed later.

The Medical Foundation staff went to the various locations to do the testing. The subjects from the Boston City Hospital, Boston Dispensary and the Peter Bent Brigham Hospital are from the out-patient medical clinics treating ambulatory patients. The children at the diabetic camps were 15 and 16 years old, and were attending the summer camps for a three-week period. The Joslin Clinic population was composed of in-patients who were residents of the Joslin Teaching Unit for one week in a diagnostic-treatment-education program. Each patient was given the following tests and interviews enabling us to obtain the characteristics of those patients who can profitably use the teaching machine.

1. Biographical interview.
2. A 50-question multiple-choice pre-program diabetes information quiz.
3. The teaching machine programed instruction.
4. The same 50-question multiple-choice diabetes information quiz as a post-test.
5. A modified vocabulary test for IQ estimate.
6. The Gates Reading Level Test.
7. An attitude interview questionnaire.

In the great majority of instances, patients did not go through the entire procedure at one sitting. Operating at maximum efficiency, and spending only the minimum time with each patient, the procedure required an average of 2½ to 3 hours. While there is no such thing as a typical patient, a composite profile of a hypothetical adult diabetic patient randomly selected for our study depicts a 53-year-old female resident of metropolitan Boston who has completed the 10th grade of school, of average intelligence, with a reading level corresponding to 7th grade, occupationally classified somewhere between skilled and semi-skilled, who has had diabetes for at least two years.

What were the results? Most patients learned and

enjoyed it. The change scores on the pre- and the post-diabetes-information quizzes showed that 77% of those patients completing the program acquired some new learning from the teaching machine. More than half of the patients who did not show new learning came from the Joslin Clinic, known for its outstanding educational program, and these persons had a significantly higher pre-program score than the others.

All patients recommend the use of the teaching machine program for other diabetic patients, suggesting it would be particularly helpful to persons newly diagnosed. Although there was no difference between the willingness of "new" or "old" patients to use the machine the "new" ones learned significantly more and applied themselves better.

The dull and the bright individual, the old and the young person, the low-level reader and the advanced reader all learned. The aged took more time and made more errors than the young. Similarly the low-level readers required more time and made more errors than advanced readers.

In the attitude interview all but five of the subjects described the experience positively. A woman on public assistance said, "If you don't understand, you can go back over the material." Other responses were, "You can't cheat like in reading a book," "You know right away whether you are right," or they described the experience as "fun," "exciting," or "stimulating." Some concentrated so completely they were heard talking to the machine. The five who didn't react positively considered it "upsetting," "boring," or "dull."

What did we learn from the 78 patients who did not complete the 3-hour session?

Twenty-nine of these subjects were either illiterate, had visual impairment, or were foreign-born and could not read English.

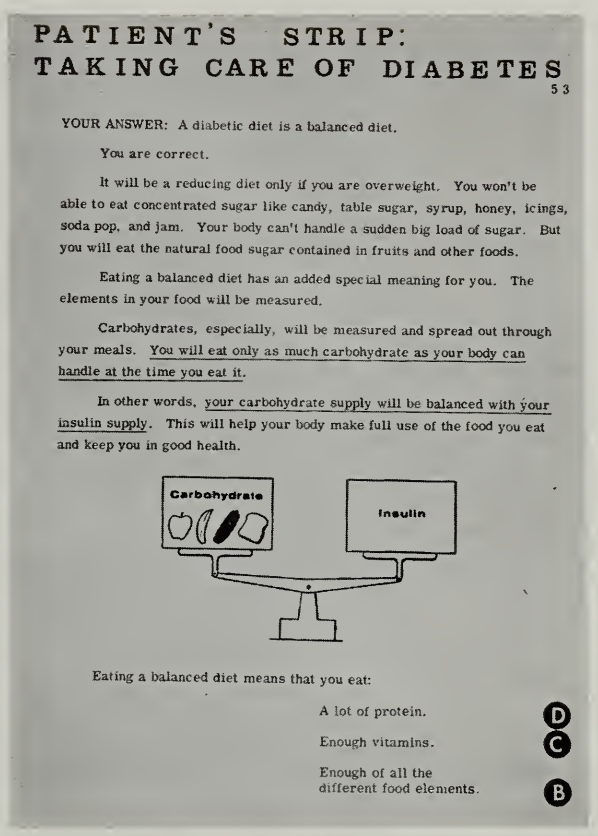
Another group of 25 represent the expected incompletes in field research. Problems of scheduling appointments, work and vacation schedules, sudden illnesses prevented these patients from completing the program.

The third group of 24 patients who did not complete the schedule is the group of greatest interest. They did not appear for return appointments after having completed part of the program, they were distinctly resistant, refusing to continue. They were anxious, upset or made suspicious by the procedure. It is possible that a treatment appointment would be regarded differently than a research request.

Supplemental Study

In addition to working with the patients, the Medical Foundation felt that it would be valuable to try to learn the response to the AutoTutor and to the programed material by the general public and by health professionals.

The general public consisted of 38 persons who were neither diabetics nor associated with the health field. From them we hoped to learn the response of "non-involved" people to this method of teaching about a disease. Their reaction was an overwhelmingly positive feeling about the machine as a method of learning about diabetes and all recommended its use for teaching patients with this illness.


PATIENT'S STRIP:
TAKING CARE OF DIABETES
53

YOUR ANSWER: A diabetic diet is a balanced diet.

You are correct.

It will be a reducing diet only if you are overweight. You won't be able to eat concentrated sugar like candy, table sugar, syrup, honey, icings, soda pop, and jam. Your body can't handle a sudden big load of sugar. But you will eat the natural food sugar contained in fruits and other foods.

Eating a balanced diet has an added special meaning for you. The elements in your food will be measured.

Carbohydrates, especially, will be measured and spread out through your meals. You will eat only as much carbohydrate as your body can handle at the time you eat it.

In other words, your carbohydrate supply will be balanced with your insulin supply. This will help your body make full use of the food you eat and keep you in good health.

Eating a balanced diet means that you eat:

A lot of protein. D

Enough vitamins. C

Enough of all the different food elements. B

FIG. 2. Sample from programed instruction for diabetic patients "Taking Care of Diabetes."

From the 20 health professionals, — doctors, nurses, psychologists, health educators and nutritionists —, we hoped to get reactions that would indicate the usefulness in a teaching program. These people were all employed full-time but were not associated with the locations from which the patient groups came. The health workers tended to be much more analytical both about the procedure and the technical contents of the material in the programed instruction. Half of this group felt that personal instruction, either individually or in classes would be preferable but all agreed that the program should be part of an overall educational program which would include live discussion and demonstration.

Problems Still To Be Studied

Further studies are required to answer such questions as the retention of the learned material over long periods of time or whether motivation for better self-care practice is effected. No data at this time is available on these two highly important factors.

Summary

The field test showed that many patients liked using

Continued on Page 236

Fiscal Controls And Professional Freedom*

Peter W. Bowman, M.D.

Program Development in Mental Retardation has proceeded to a point where reappraisal of fiscal procedures and traditions is indicated.

This is particularly necessary because of the impasse that has been reached in many places between the obvious, professionally agreed upon, and sometimes legislatively approved program structures, and what actually exists, an impasse that seems to interfere with the effective administration of professional programs.

It may well be that this situation is the result of traditional concepts that have been part of governmental operations as it relates to business and administrative functions that always have been part of State and Federal Governments. Inclusion of professional hospital administration and institutions of higher learning were not part of the original concerns of Government in this country and still, to-day, are looked upon, in many places, as an unnecessary evil where they have become part of tax-supported Government.

It is suggested that these latter functions were added to governmental activities at a time when fiscal procedures and policies were well-established. It is questionable, in my mind, whether the peculiar needs of professional programs were ever included, when legislative and administrative procedures were originally established.

Another historic factor, no doubt, is the relative simplicity of the old custodial mental hospital: The professional needs were relatively simple and easily met.

In recent decades, more particularly during the last twenty years, and at an accelerated pace, we have witnessed profound changes in our scientific knowledge of causation, diagnosis, and therapy.

Simultaneously, the problem increased quantitatively to a point where custodial concepts have become obsolete for economic, if for no other reason. This has added, also, the need for enlightened research aiming at prevention and more successful therapy in areas where our knowledge is lacking.

The professions participating in these programs have established, by and large, minimum standards of professional preparation, of accepted policies and practices, and the broader professional organizations have formulated minimum standards of staffing and physical facilities. Licensing requirements for clinical psychologists, teachers, physicians, physical therapists, and others, have been established by legislative process.

Adherence to minimum standards, of staffing and facilities, are almost universally lacking and in distinct contrast to the situation of those hospitals which are part of a non-profit or voluntary group.

Specifically, accreditation has been denied the vast majority of State-operated hospitals for the mentally ill and retarded. It is this conflict between the professional judgment and administrative or legislative assumption of responsibility overruling, in fact, knowledge and experience of the experts, that requires serious discussion and reconsideration.

Time does not permit me to go into all details. However, I am not even certain that this would be necessary since the results of the conflict are universally known and felt. At any rate, I shall limit myself to discussing a few pertinent comments.

In the area of professional services, the demands made upon legislators are admittedly complex. Traditionally, State governments have taken on the responsibility to run psychiatric hospitals. Traditionally, they were conceived to be asylums for custodial care. Traditionally, State governments have supported free education for our children. Traditionally, free education meant a curriculum that catered to the so-called "average mind" and had no relation to the retarded or to the gifted child. Traditional conceptualization, exactly, is our mutual problem.

Psychiatry, along with other basic and medical sciences, has gone through, and is still proceeding along, a period of profound change that has rendered the traditional concept of an "asylum" obsolete. Our State hospitals are gradually emerging as centers of increasing scientific competency where diagnostic accuracy and therapeutic effectiveness, along with an increased community tolerance and understanding of mental illness and mental retardation, are putting a stop to a never-ending plant expansion to house another thousand patients.

Today's psychiatrist is no more the kind (or not so kind) patriarch of an odd, self-contained, and stagnant society inside the asylum. He has become an articulate, scientifically trained clinician, therapist, and researcher, who considers the still existing problems of mental illness and mental retardation as a challenge rather than as a fate. He is inspiring to, and inspired by, clinical psychology, genetics, psychiatric social work, education, psychiatric nursing, biochemistry, anthropology, and other specialties. Instead of a custodial asylum, we are finding ourselves responsible for a sophisticated, demanding, complex hospital program that virtually shatters governmental traditional concepts, that attempts to

*Presented at the Annual Meeting of the American Association on Mental Deficiency, May 25, 1963, at Portland, Oregon.

shatter governmental procedures because they have not kept pace with the State Mental Hospital evolution. It is in this area that I plead for considerate attention.

Modern hospital management often requires immediate decisions, flexibility, imagination, and ability to improvise and to adjust to changes from one day to the next. I would like to suggest to you that line budgeting is constantly defeating the needs of today's hospital. It prevents administrative decision-making without removing administrative responsibility. It implies administrative incompetence when you ask for a competent administrator. It implies suspicion when you ask for integrity. In fact, it places the fate of thousands of hospital patients into the hands of accountants who are totally unprepared by background, experience, and knowledge, to assume such a vast responsibility.

May I suggest that the only answer is unit budgeting based on actual cost. The expenditure of funds cannot any more be efficiently predicted one or two years in advance by the administrator and then be determined with accounting methods by the Legislature. Unit budgeting would give the man who is responsible for the hospital operation a chance to assume this responsibility. Unit budgeting would remove from accounting personnel all responsibilities except accounting. Annual professional audit then would become your yardstick of what your hospital accomplished and failed to accomplish.

The chief reason, today, for many highly qualified professional specialists to refuse acceptance of an appointment in a State Hospital system is the calamity resulting from the system, its unrealistic worship of accounting procedures that take precedence over patients' needs, its traditional rigidity, its lack of creative search for better and more efficient ways of providing diagnostic and therapeutic facilities to hospital patients.

Another basic responsibility that I feel belongs to the legislative branch of our State Governments is the provision for sound personnel laws and policies. In view of the personnel requirements of today's State Hospital, it is essential for us to decide whether we wish to operate competent hospitals or to provide casual personnel on a "hit or miss" approach. Unfortunately, it is not sufficient for legislators to authorize a personnel services budget that could be considered reasonably adequate. Many, if not all, professional personnel belong to categories that are in considerable demand nationwide.

Educational requirements are so restrictive that they disqualify a large segment of our population. I feel we must stimulate students at the college age levels to go into the fields where there is such a demand.

In addition, I feel that we must provide for personnel in the State Personnel Departments themselves who are qualified to evaluate professional services, qualifications, and procedures.

I know of a recent incident where a hospital administrator requested authorization to employ a Vocational Rehabilitation Counselor who lacked six months of the required six years experience but had all the other qualifications. The Personnel Department refused to authorize the appointment since there were "several qualified people" on the "eligible list." As it turned out, among those certified were several who lacked *all* experience, not just six months, among them a minister who had taken the test "for the fun of it" and who admitted that he was inexperienced and unqualified. He had passed the "test."

Or, because a personnel technician feels that it is more important to have college transcripts for a speech therapist on his desk before even a provisional appointment can be announced, the hospital loses the therapist, who accepts a job that was not so restrictive in its initial stage. I might add to this, that in the State of Maine, the Personnel Department hardly ever successfully recruited psychiatrists, qualified psychiatric social workers, registered nurses, occupational therapists, physical therapists, to make legislative intent a reality. But when we find one, as the result of our own efforts, restrictive practices have sometimes prevented prompt action.

In this area, you can find the same antiquated system interfering with our hospital operation as we find it in our prescribed budget procedures.

The State Personnel Department assumes the right to prevent employment except under their policies. They are not responsible for the 24-hour care of our patients and thus we have the administrative responsibility without the right to make the responsibility meaningful.

As long as we have a State Personnel Department, I feel that the Legislature must make such provisions that will enable the Department to render effective and prompt service instead of obstructing service to patients that was authorized by appropriation.

To resolve the professional problems under discussion here, we must further reconsider broadest concepts and images.

Philosophically, we need to adjust our political thinking to include the mentally retarded population in our democratic form of government at the level of their existence, taking into account their needs and their contributions. This need cannot be met by either discrimination or over-protection. Consequently, the answer cannot be provided by inaction because of our fears of an "all powerful welfare state" nor by appropriating ample funds to provide lifelong entertainment and recreation for the so-called "less fortunates" at the taxpayers' expense.

Legally, we must realize that our laws were written and are applicable for what is thought to be the "average citizen" who, presumably, represents the person of average intelligence capable of making choices, applying critical judgment, and appreciating value systems inherent in our culture and civilization. We know that these assumptions, to a varying degree, are not necessarily applicable to mentally retarded individuals. In fact, they may be quite deficient in some areas—a fact that may render existing laws either inapplicable, mean-

ingless, or outright discriminatory. Time limitations do not permit us to go into detail. I do wish, however, to mention the right to vote, the right to contract a marriage and have children, and the right to contract and execute business. If we talk of, and plan, integration of the mentally retarded in our community (and we have no other choice) we must compare our existing civil rights legislation and criminal codes with the actual and varying needs and forms of mental defect. We must adjust our laws to include consideration of the peculiarities inherent in the retardation syndrome.

Economically, we shall have to weigh carefully the balance between investment toward research, diagnostic, therapeutic, and rehabilitative efforts and the returns that are provided by converting a social liability into a social asset—even only a partial asset versus total liability, as is presently the case with many of our hospital patients. We must plan carefully the most efficient and humane program for those permanently disabled who are not capable of even partial rehabilitation. These decisions, too, must be based upon informed objective judgment that is free of emotionalism and defensive mental mechanisms. It is a legislative challenge to see that careful studies be carried out by competent economists, sociologists, vocational rehabilitation counselors, medical specialists, and welfare personnel. This will require time and talent before we will have practical answers. Without these studies, however, we shall have to pay the penalty of trial and error — not counting the human misery in the process.

In conclusion, it is suggested that fiscal policies and procedures must be studied by the professional organizations, examining their impact on administration of professional programs, maintenance of professional standards, and aiming at elimination of the hazards inherent in budgeting that has little, if any, relationship to professional program needs.

It is essential that the American Association on Mental Deficiency, the American Medical Association, the American Psychiatric Association, and other bodies, take concrete steps to reconcile the obvious conflict between professional judgment and fiscal and legislative conduct.

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THE MANAGEMENT OF INJURY TO THE LIVER, SPLEEN AND PANCREAS — *Continued from Page* 230

5. All splenic injuries should be treated by splenectomy.
6. Pancreatic injuries should be treated by re-establishment of duct continuity with the gastrointestinal tract, hemostasis and drainage.
7. Antibiotics are indicated with hepatic and pancreatic trauma.

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A TEACHING MACHINE FOR DIABETIC PATIENTS, A STUDY REPORT — *Continued from Page* 233

the AutoTutor and learned from it; secondly, that a machine can be an efficient and useful means for imparting basic information agreed upon by the experts in the field and frees the professional from the routine; and finally, that the very individuals who are likely to be particularly difficult problems for other teaching approaches, such as the illiterate, language-handicapped and infirm will find no ready solution through this program. However, the use of the teaching machine with those patients who do benefit from it can provide you with more time to spend with your difficult diabetic patient.

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Educational Programs in Nursing and Related Career Opportunities

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The members of the AMA Committee on Nursing believe it is fundamental to an understanding of nursing and its problems that physicians have some knowledge of the differences among educational programs in nursing and related career opportunities. Further, the members believe that such an understanding is a vital link in strengthening the relationships between the medical and nursing professions. Therefore the following report has been prepared to provide an overview of the diversification in nursing education.

There are presently wide varieties of educational programs in nursing from which a high school student can choose if she desires to become a nurse. There is also more than one avenue to follow if the professional student wishes to obtain a baccalaureate degree. The educational programs in higher education also vary, de-

Data on Programs in Nursing Education

Type of Program	Length of Program	Minimal Educational Requirements	Educational Setting	Administrative Control of School	Range or Average Tuition	Financial Responsibility	Certificate or Degree Conferred	Position for Which Eligible
Practical nurse	Approx 1 calendar yr	2 or more yr of high school, dependent on school requirements	Vocational high school, hospital, or junior college	Local school board or board of trustees of hospital	Free; up to $800	Usually school subsidized; student purchases uniforms, books, etc.	Diploma or certificate—eligible to take examination for licensure as LPN	Bedside nursing under supervision of physician or professional nurse
Diploma (hospital)	27-36 mo	High school diploma	Hospital	Board of trustees of hospital, or independently incorporated yet associated with a particular hospital	$106 to $2,207 for 3 yr (median school $826)	Student tuition, hospital and private funds	Diploma—eligible to take examination for licensure as RN	Bedside nursing
Associate degree	2 academic to 2 calendar yr	High school diploma	Community, or junior college	Local school board, or board of trustees of college	Minimal in state or community jr. col. up to $2,000 per yr in private colleges	Student tuition, state or community sponsorship, and private funds	*Associate degree—eligible to take examination for licensure as RN	Bedside nursing
Basic or generic baccalaureate	4 academic or 4 calendar yr. A few schools offer 5-yr courses	High school diploma	College or university	College or university	Varies in state university; up to $2,000 or more per yr in private universities	Student tuition and college or university funds	Baccalaureate degree—eligible to take examination for licensure as RN	Bedside nursing, public health nursing (candidate for head nursing)
Baccalaureate for RN	2½-3 academic yr or more	High school diploma	College or university	College or university	Varies in state university; up to $2,000 or more per yr in private universities	Student tuition and college or university funds	Baccalaureate degree (BS, BN, etc.)	Bedside nursing, public health nursing (candidate for head nursing)
Master's	1-2 yr	Baccalaureate degree	College or university	College or university	From $2,200 to $3,500 per yr	Student tuition (traineeships avail. to students from USPHS and others)	Master's degree (MS, MA, MEd, MPH)	Administrator, educator, clinical specialist
Doctoral	Varies with choice of major area; approx 3 yr or more	Baccalaureate and master's degrees	College or university	College or university	From $2,200 to $3,500 per yr	Student tuition (research fellowships avail. to students from USPHS and others)	Doctoral Degree in nursing or related field	Administrator, educator, investigator, and others

* Some states do not permit graduates of these schools to qualify for RN licensure and practice.

pendent on the objectives and the philosophy of the faculty and the university of which the nursing school is an integral part.

The table represents the types of programs available to potential or graduate nurses, or both, the educational facility in which the particular program is offered, and the related fees as well as the locus of responsibility for the fee.

A few experimental programs hold some promise for the future; for example, certain diploma schools have reduced the length of their programs to 2 years. In order to provide both supervised experience and some remuneration for the individual, the schools have established internships which vary in length up to 1 year and provide a stipend. Some state laws require 3 years of educational preparation for admission to examinations for licensure. This stipulation prevents both experimentation with the length of diploma school programs and also the employment, in certain states, of graduates of associate degree programs. However, efforts are currently being made in several states to revise nurse practice acts in order that such experimentation will be possible.

One diploma school has arranged a plan whereby their students may elect to attend a nearby college at the same time they are attending the hospital school. One of the more interesting community plans is that of five schools pooling teaching facilities and sharing faculty for the first year of their diploma programs. Eventually they visualize one large, community, 2- or 3-year program which will use the clinical facilities and the dormitories of the five hospitals involved in the project as well as the educational facilities of a local community college.

Enlightened nurses, educators, and others recognize that the diversity and heterogeneity of nursing programs lead to misconceptions and misunderstanding on the part of patients, physicians, and potential nursing students and their parents. They realize that nursing education is presently in the process of maturation. As yet no one has come forward with a plan acceptable to all interested groups and one which will lead the way out of confusion. The American philosophy of education has always been that of diversity–not homogeneity. In keeping with this philosophy, the concern about the varieties of programs may not be germane. The challenge for nurses and others including physicians, is to define the role of the professional nurse and the practical nurse, and to examine these roles and responsibilities in relation to the changing role of the physician in a modern scientific world. What kind of care do patients need and who can most effectively provide that care? When the answer to this question has been made explicit and has been agreed upon, it might be less difficult to predict the type of educational program in nursing essential to meet the needs of the sick of the nation, to teach preventive measures for maximum health and the like.

The AMA Committee on Nursing respectfully suggests that each physician keep informed on trends in nursing in order that he can contribute wherever possible to the improvement of nursing education programs and to the clarification of the role of the nurse.

In conclusion, the Committee suggests that the Committee on Careers, National League for Nursing, 10 Columbus Circle, New York, be contacted for information on accreditation of professional schools of nursing and for careers material in general.

INSIGHT SPOILS "DOUBLE BLIND" TEST

A silly sidelight, but a serious one, is that (FDA) labeling requirements have made some research on patients impossible. The placebo which is used instead of a drug on patients, to make sure that it's the drug and not the patient's attitude that causes changes in his condition, now must be labeled in such a way that he knows when he's getting the medicine and when he's getting the fake. It spoils the experiments. — Editorial in **Journal of the South Carolina Medical Association,** September 1963.

State Of Maine

Department of Health and Welfare

DEAN H. FISHER, M.D.
COMMISSIONER

The Diagnosis of Syphilis*

NICHOLAS J. FIUMARA, M.D., M.P.H.**

Syphilis is on the rise. For example, there was a 53% increase in infectious syphilis in the United States for the fiscal year 1960 over the previous year. The rates for 1959 were 23% higher than for 1958. In the past two years, reported cases of infectious syphilis rose by 75%.[1,2] The major weapons against this surge rest in the hands of the practicing physician: namely, early diagnosis and treatment.

The diagnosis of early and late symptomatic syphilis presents little difficulty. Confirmation is afforded by a positive darkfield examination and reagin tests in the early symptomatic cases, and in late syphilis, with biopsies, 7-foot heart plates, spinal fluid examinations, and blood reagin tests. But the patient who chances to have a positive blood test for syphilis without detectable lesions presents a challenge to our diagnostic acumen. Yet, even in this situation, the physician can, as a rule, establish or rule out infection with syphilis within four office visits.

I would like to outline the routine diagnostic steps which we have found useful over the years, with the understanding that these procedures are not hard and fast but that they can be varied with the individual case.

Let us consider the plight we and our patient share when a positive blood test for syphilis has been discovered during an examination for an unrelated condition such as fracture or pregnancy. The physician's response may be one of surprise, but the patient's emotions may run from fear to indignation, from wary watchfulness — admitting nothing — to a tearful confession of earlier indiscretions. Then comes the anxious question, "What does it mean? Do I have what you infer or don't I? Why can't you tell me now?" This impatience may even turn into unreasoning hostility to the physician. Let us now begin our examination.

First Visit: 1. History. Take the time to obtain a good history, because quite often a diagnosis of syphilis can be made from it. Use language the patient can understand; repeat the questions in other words; be particularly tactful with married persons, especially if the spouse is present. Specifically, the physician is interested in the following items of information:

A. History of acquired or congenital syphilis by name or signs and symptoms.

B. History of any venereal disease; about 3% of patients with gonorrhea in Massachusetts are also infected with syphilis.

C. Family history of syphilis, with questions as to the number of siblings in the family, how many younger or older than the patient; history of miscarriages of the mother, stillbirths, neonatal deaths (women are more informative on this than men); history of mother taking patient as a child to a physician or clinic for series of treatments; history of similar blood-test results in patient's siblings, state of parents' health, date and place of hospitalization, so that if necessary their hospital record can be checked for the results of blood tests.

D. Serologic history. Here the physician attempts to find out if and when a blood test for syphilis was performed in the past and with what results. This information will pinpoint the approximate time of infection if the patient has syphilis, and will help in making the diagnosis of acute or chronic biologic false positive reaction, if the patient does not have syphilis. There are many situations where blood tests are customarily taken and specific questions can be asked such as the following:

(1) Marriage. Since 1941 there has been a law in Massachusetts, (Maine, 1941) requiring prospective couples to have a blood test for syphilis before marriage. Often when asked what were the results of the blood test the patient says, "All right, I guess. The doctor didn't say anything about it." At this stage of examination we can assume that the blood test was negative.

(2) Pregnancy. Since 1939, a prenatal blood test law has been in effect in Massachusetts (Maine, 1939). This requires the physician to take a blood test for

*This is Part I of Dr. Fiumara's paper dealing with the general subject of The Diagnosis and Treatment of Syphilis. Part II, which is on the specific subject of The Treatment of Syphilis, will appear in the December issue of The Journal.

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syphilis on the first prenatal visit. Again, in the absence of any statement by the obstetrician to the patient, it may be assumed that the blood test was negative.

(3) A blood donor is tested each time he donates blood. Was the donor ever informed that his blood could not be used?

(4) Hospital admission. Part of the routine laboratory workup of a new patient is a blood test for syphilis.

(5) Prisoners. Any person jailed for thirty days or more is required to have a blood test for syphilis. This requirement is also enforced by federal prison authorities.

(6) Selective service. Has the patient been in the military service? What was the blood test report before he went in and when he was discharged?

(7) Pre-employment examination. Many industries perform blood tests for syphilis as part of the industrial examination.

(8) Insurance examination.

E. History of diseases causing biologic false positive reactions. There are two types of biologic false positive reactions, acute and chronic.[3] The acute reaction obtains in those patients whose blood tests for syphilis have been positive for less than three months. Any infectious disease except leprosy may cause this type of reaction. In Massachusetts, the principal ones are infectious mononucleosis, viral pneumonias, and infectious hepatitis. In addition to these diseases, immunization may cause acute biologic false positive reactions — the most common one is due to smallpox vaccination.

Chronic biologic false positive reactions occur in patients whose blood tests for syphilis remain positive for more than three months — usually for years. Leprosy is the only communicable disease associated with this phenomenon. "Connective tissue diseases" account for about 40% of such reactions. The rest have not been explained.

Today no patient should be diagnosed as having acute or chronic biologic false positive reactions unless he has had negative treponemal tests.

2. Physical examination. Its purpose is to detect signs of early or late acquired or congenital syphilis. Be mindful of congenital syphilis and inspect the face closely for its stigmata. Look for cardiovascular or neural involvement. Many times the diagnosis of syphilis is made at this point in the examination.

3. Repeat the blood test. This should be done even if the diagnosis of syphilis has been made through the history and physical examination. Request a quantitative blood test, so that the post-treatment response can be followed. If the diagnosis was questionable up to this point, the level of serologic titer will be helpful. Of 155 patients with chronic biologic false positive reactions who were examined, five had persistently doubtful tests in whole serum; 103 (66%) had positive tests in a dilution of 1:0, 16 in 1:2, 20 in 1:4, 10 in 1:8 and only one in 1:16. Thus, if a patient has a blood test positive in a dilution higher than 1:16, the presumption is strong that this is due to syphilis. Exceptions, other than infectious mononucleosis, are infrequent. A persistently low serologic titer does not rule out syphilis.

4. Epidemiologic examination. The patient is asked to bring his spouse (or mother) on the next visit. If the patient is hospitalized, the spouse can be blood-tested when she visits the patient in the hospital.[4]

Second Visit: At this time a review of the patient's history, physical examination, and serologic tests is made to determine whether there are sufficient data to justify a diagnosis of syphilis. If the answer is yes, the patient receives a lumbar puncture and the spinal fluid is examined for cell count, total protein, and serologic reaction. A positive spinal fluid serologic test means neurosyphilis. If the physician does not think the accumulated evidence is sufficient to make a diagnosis of syphilis, he proceeds to gather more data.

1. Repeat the history. Several days to a week having elapsed since the last visit, the patient may remember significant details which he did not recall before. Some patients may relate apologetically how in their younger days they had had a "touch" of syphilis, thought it was cured, and forgot about it.

2. Repeat the physical examination to make sure nothing was missed in the first one.

3. Epidemiologic examination of the spouse. If he or she has a positive blood test, it points to a diagnosis of syphilis in both parties. Examination of the spouse no later than on the second visit is particularly important if the patient is pregnant.

4. Repeat the quantitative blood test. A significant rise in titer indicates the probable presence of early active syphilis.

5. Lumbar puncture. Prior to the availability of the screening treponemal tests, such as the Treponema Pallidum Complement Fixation (TPCF) and the Reiter Protein Complement Fixation (RPCF) tests, a lumbar puncture would have been performed on the second visit. It can be done then or postponed until the third or fourth visit.

6. Screening treponemal test. In Massachusetts we use the RPCF test (Maine, Kolmer Reiter Protein (KRP), a similar test); if positive, this means that the patient has or has had syphilis or a treponemal disease.[5]

Third Visit: Again the accumulated data are evaluated to determine whether there is sufficient evidence to establish a diagnosis of syphilis. If the spinal fluid serologic test is positive, if the spouse has a positive blood test, or if the RPCF test is positive, any one of these positive tests is enough by itself to confirm the diagnosis of syphilis. If, however, every one of the above tests is negative, the physician should have a Treponema Pallidum Immobilization (TPI) test performed. If positive, this means syphilis.

Fourth Visit: The physician on this visit will have the results of the TPI tests to evaluate. If this test result is negative, he can make a diagnosis of biologic false positive reaction with some degree of confidence. In a short time, physicians in Massachusetts will have available another treponemal test, the Fluorescent Tagged Antibody (FTA) test.

The foregoing represents the routine procedure followed in the diagnostic workup of a patient discovered to have a positive blood test for syphilis without evidence of early or late symptomatic lesions. In a study of 703 diagnostic problem cases in which a diagnosis of

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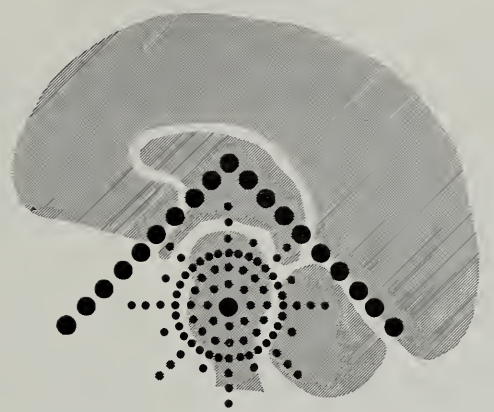

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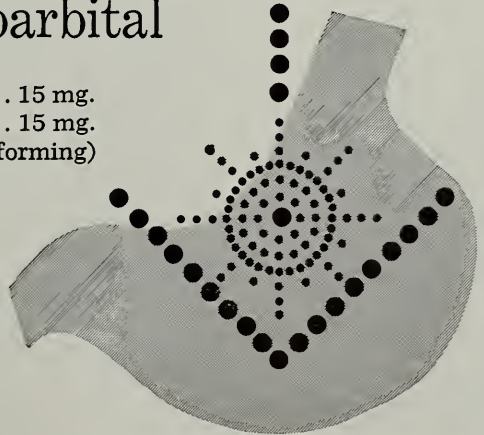

Necrologies

SILAS A. COFFIN, M.D.

1902-1963

Silas A. Coffin, M.D., 60, of Bar Harbor, Maine died on October 15, 1963. He was born in Everett, Massachusetts on November 21, 1902, son of Silas Allan and Selina LaPierre Coffin.

Dr. Coffin graduated from Pennell Institute in Gray, attended the University of Maine and received his medical degree from Boston University Medical School in 1928. He did postgraduate study at the Massachusetts Memorial Hospital in Boston from 1928 to 1929 and the Eastern Maine General Hospital in Bangor, Maine from 1931 to 1932.

Dr. Coffin performed non-transportable surgery in the European Theater in World War II while serving as a Major with the 3rd Auxiliary Surgical Group, 1st U. S. Army. He received five battle stars, the European-African Middle Eastern service medal with bronze arrowhead, distinguished unit badge, American Service Medal and the Croix de Guerre.

Dr. Coffin was a past president of the Hancock County Medical Association, a member of the Maine Medical Association and the American Medical Association. He was also a member of the Maine Chapter of American College of Surgeons, surgical staff member of the Mount Desert Island Hospital at Bar Harbor, the Massachusetts Memorial Surgical Society and a member of the Pythogoaean Lodge of Fryeburg.

Surviving are his widow, the former Phyllis C. Turcotte of Bar Harbor; two daughters, Mrs. Richard Libby of Bar Harbor and Mrs. Joseph DeRoma of Wollaston, Massachusetts; one son, Richard C. McFarland of New Orleans, Louisiana; two brothers, Dr. Ernest L. Coffin of Northeast Harbor and Dr. Raymond B. Coffin of Seattle, Washington; two sisters, Mrs. Alice C. McFarland of Seattle, Washington and Mrs. Leon Sinclair of Norfolk, Virginia; two grandsons and several nieces and nephews.

CHARLES H. PATTON, JR., M.D.

1923-1963

Charles H. Patton, Jr., M.D., 39, of Brunswick, Maine died on September 28, 1963. He was born in West Chester, Pennsylvania on December 1, 1923, son of Charles H. and Venadys Kelley Patton.

Dr. Patton graduated from Pennington Preparatory School in Pennington, New Jersey, and Dartmouth College and received his medical degree from the University of Pennsylvania Medical School in 1950. He interned at the Philadelphia General Hospital from 1950 to 1951 and served a residency at the Mary Imogene Bassett Hospital in Cooperstown, New York from 1951 to 1952 and the Boston Children's Hospital from 1952 to 1953. He came to Brunswick in 1956 and practiced here until his death.

Dr. Patton was chief of pediatrics at the Regional Memorial Hospital and Parkview Memorial Hospital in Brunswick, served on the staff of the Maine Medical Center in Portland and was associated with the Merrymeeting Medical Group in Brunswick.

He was a member of the Cumberland County Medical Society, the Maine Medical Association and the American Pediatrics Association.

Surviving are his widow, the former Jean Gurley of Brunswick; three sons, Christopher, Robert and Sam; one daughter, Tracy; his parents; and a brother, Richard of Pittsburgh, Pennsylvania.

County Society Notes

SOMERSET

100th Anniversary Celebration

August 20, 1963

The Somerset County Medical Society celebrated its 100th anniversary on August 20, 1963 at a meeting at the Colony House in Lakewood, Maine.

Richard P. Laney, M.D. read the minutes of the first medical meeting which was held in 1863 and presented a historical background of the society. George E. Sullivan, M.D. read the Somerset County Medical Society's application for affiliation with the Maine Medical Association. Dr. Sullivan also read a list of names of some of the early physicians active in Somerset County. Some of these continued in their chosen profession, while others turned to such diverse ways of making a livelihood as carrying mail, becoming ministers, operating drug stores, or even becoming mechanics.

Drs. W. Edward Jordan, Jr. and Howard L. Reed read excerpts from text books of Medicine concerning the treatment of peritonitis one hundred years ago at about the time of the founding of the Somerset County Society.

The following officers were elected for the ensuing year:

President, W. Edward Jordan, Jr., M.D., Skowhegan
Vice-President, H. Carl Amrein, M.D., Madison
Secretary-Treasurer, Marian L. Strickland, M.D., Canaan
Delegate to the Maine Medical Association House of Delegates: George E. Sullivan, M.D., Fairfield. Alternate: Harland G. Turner, M.D., Norridgewock
Board of Councilors: Marian L. Strickland, M.D.; Howard L. Reed, M.D. and Maurice S. Philbrick, M.D., both of Skowhegan
Program Committee: Marian L. Strickland, M.D., Edgar J. Smith, M.D., Fairfield and Richard P. Laney, M.D., Skowhegan
Board of Ethics and Discipline: William B. Grow, M.D., Fairfield, Franklin P. Ball, M.D., Bingham and Henry E. Marston, M.D., No. Anson

Edgar J. Smith, M.D. presented the A.M.A.'s plan Operation Hometown.

Harland G. Turner, M.D.
Secretary

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Maine Heart Association Notes

Current Concepts Concerning The Etiology Of Essential Hypertension

"Since hypertension was identified as a distinct disease at the turn of the century, there have been many occasions when it seemed likely that its cause had been found, but each time it has proved illusory, and at present no one theory seems more promising than another.

"To form an opinion concerning the etiology of essential hypertension from the present evidence is difficult, not because of the paucity of facts, but rather because of the apparently equal strength of the rival theories. The possibility which would account for the greatest number of known facts is that essential hypertension is primarily a renal disease which results, either directly or through the intervention of the adrenal cortex, in the abnormal handling of sodium, water or, possibly, some other electrolyte. This, in turn, leads to an increase in peripheral resistance, either actively through changes in the contractile properties of the vascular smooth muscle or passively by decreasing the lumen of the vessels. . . . Since this speculation involves a chain of events, it would seem reasonable to propose that there may be a variety of causative mechanisms affecting the system at different points, and/or that there is probably more than one means of producing the postulated metabolic abnormality."

(Conway, James. American Heart Joural, Volume 66, pages 409-413, 1963.)

COUNTY SOCIETY NOTES

Continued from page 242

OXFORD

October 2, 1963

A meeting of the Oxford County Medical Society was held at the Bethel Inn in Bethel, Maine on October 2, 1963.

The following officers were elected for the coming year:

President, Leonidas B. Kudisch, M.D., Rumford
Vice-President, Joelle C. Hiebert, Jr., M.D., Norway
Secretary-Treasurer, Albert P. Royal, Jr., M.D., Rumford
Delegates to the Maine Medical Association House of Delegates: H. Richard Bean, M.D., Norway (1 yr.) and Peter B. Aucoin, M.D. (2 yrs.). Alternates: James A. MacDougall, M.D., Rumford (1 yr.) and Walter G. Dixon, M.D., Norway (2 yrs.)

Ernest W. Stein, M.D., President of the Maine Medical Association, was a guest speaker.

The Maine Medical Education Foundation was discussed at length and it was voted that a resolution be sent to the Committee on Recruitment, Aid and Placement and to the Executive Director of the Maine Medical Association, Dr. Daniel F. Hanley, as follows: that the Secretary suggest to the committee and Council that publicity and/or statistics concerning the size of the Maine Medical Education Foundation fund and its present benefits be included with the notice of the assessment for the fund when it is sent to each physician.

Morton A. Madoff, M.D., of the New England Medical Center, spoke on the use of oral Penicillin.

ALBERT P. ROYAL, JR., M.D.
Secretary

DEPARTMENT OF HEALTH AND WELFARE

Continued from page 240

syphilis could not be established on the basis of the history, physical, epidemiologic, and routine serologic examinations, it was found by positive treponemal tests that 78% were infected with syphilis. The rate was 82% in clinic patients and 63% in private patients.[3] Thus, a persistently positive blood reagin test, such as the VDRL test, means syphilis until proven otherwise. Only when both RPCF and TPI tests are negative can a diagnosis of biologic false positive reaction be made.

This, then, is an outline of a series of steps enabling a physician to establish the diagnosis of syphilis within four office visits.

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of the
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Lipids And Lipid Metabolism*

Ottina Merz**

The fate of an organism — whether survival or death — is dependent upon that organism's ability to provide a continuous source of energy for its integral parts. Man is a complex organism whose organ systems, tissues, and cells are also perishable if not supplied with adequate amounts of energy to maintain their metabolism and, consequently, their functions. The numerous and diverse cells which form the broad base in the pyramid of a complex organism survive only when the all-essential element energy is procurable — whether chemical, mechanical, or electrical. While the cells are capable of utilizing these three types of energy in their metabolic processes, they have no mechanism to utilize thermal energy; thus any heat energy produced along with the other forms of energy is lost and the efficiency of the particular process is decreased with a relative increase of thermal energy production.

In anabolism, energy is stored in the body by synthesis of new body substances. Energy is released upon the breakdown of the basic foodstuffs — carbohydrates, proteins, and lipids and their metabolites — to form water and carbon dioxide. More specifically, the cells of the organism utilize the energy produced in chemical reactions, especially those reactions concerned with the conversion of bonds uniting carbon and hydrogen to bonds between (1) carbon and oxygen or (2) hydrogen and oxygen. Under specific conditions of temperature and pH, the three sources of substances producing such reactions are (1) exogenous foodstuffs, (2) stores in liver or adipose tissue, and (3) the substances within the protoplasm of the cells themselves.

This discussion will be limited to lipids, their digestion, absorption, transport, metabolism, and metabolic abnormalities.

The lipid group includes the following three commonly-occurring types of substances:

(1) True or neutral fats — the fats least common except for food storage. They are esters of glycerol and various fatty acids, consisting of one molecule of glycerol and three molecules of higher fatty acids, such as olein.

(2) Complex compounds of fats in which one of the fatty acids has been partially replaced by another molecule such as a phosphorus-containing radical to form phosphatides; a glucose molecule to form glycolipids; or globulins to form lipoproteins. Included among this type of compound are the lecithins ($C_{42}H_{84}PO_9N$) which are composed of glycerol esterified with two molecules of fatty acids and a molecule of phosphoric acid, which in turn is united with a molecule of the nitrogenous base, cholin; the cephalins which are made up of glycerol and two fatty acid molecules, plus phosphoric acid and the nitrogenous base, amino-ethyl alcohol (colamine); and the sphingomyelins containing not glycerol but composed of a fatty acid, phosphoric acid, choline, and sphingosine.

(3) The sterols or solid alcohols such as cholesterol and various hormones, such as estradiol, testosterone, and progesterone.

Lipids differ from other biological groups in that they are insoluble in water and soluble in organic solvents, such as ether, acetone, chloroform, etc. Weight for weight, lipids are capable of releasing approximately

*First place winner in a contest among students of laboratory technology in the State sponsored by the Maine Association of Medical Technologists.

**Student Technician, Thayer Hospital, Waterville, Maine.

2.3 times as much energy as either carbohydrates or proteins.

Mechanisms For Lipid Digestion, Transport, And Storage

The small intestine is the main site for lipid digestion, since it contains lipase from the pancreas and bile containing the lipid-emulsifying agents, bile salts and acids. According to Wang and Grossman, when the pancreas receives a humoral stimulus by secretin and pancreozymin, hormones produced by the presence of fats in the intestinal mucosa, its cells in turn secrete larger amounts of its enzymes for its pancreatic fluids, including lipase. Lipase breaks the molecules of fat into glycerol and fatty acids. The liver is stimulated to produce bile when its salts are absorbed by the intestinal mucosa; the gallbladder, in turn, releases the bile from storage when these salts are absorbed from the large intestines. The bile salts and acids act as emulsifying agents which, with the aid of the churning movements of the intestines, produce a fine emulsion of fat droplets which are then split by the pancreatic lipase. Thus about 50% of the fats are partially hydrolyzed to di– and monoglycerides and then into glycerol and fatty acids which are sufficiently reduced in particle size that they may pass through the mucosal cells of the villi, where they are resynthesized into molecules of fat which aggregate as fine globules too large to enter the capillaries of the bloodstream (the chylomicrons) and they enter the lymph capillaries. The vessels eventually empty into the thoracic duct which in turn empties into the venous system. Fatty acids composed of ten carbon atom chains or less may enter the portal blood system either in free or esterified states and travel to the liver by this route. Their transport into the mucosal cells to the portal blood is facilitated by certain bile acids which form water-soluble complexes with these fatty acids. Thence the neutral fats and their constituents are destined for metabolism or storage.

Exogenous phospholipids in foods or endogenous phospholipids in the bile and intestinal secretions are absorbed in the intestines as such or hydrolyzed by lecithinases of the pancreatic juice. Free fatty acids produced in this hydrolysis may be exchanged with the glycerides and cholesterol esters. The phosphatides appear in the lymph and blood as components of lipoprotein complexes. The main site of plasma phospholipid synthesis is the liver, which also is the organ mainly involved in their removal from the plasma.

Certain sterols, mainly cholesterol, are absorbed readily in the intestines. The cholesterol source may be exogenous, from the animal foodstuffs, or endogenous, from the intestinal secretions or bile. Its esters are believed to be all hydrolyzed cholesterol esterase in the pancreatic juice. Cholesterol and its esters are absorbed into the lymph and transported to the venus system. While absorption of cholesterol into the lymph is poor in the absence of bile, it may be improved by other dispersing agents, such as mono- and diglycerides. In the fasting state, the concentration of total cholesterol in the lymph remains quite constant at approximately one-third the blood plasma level of total cholesterol.

Lipid transport in the blood is accomplished by the combining of the various lipids with water-soluble proteins to form lipo-protein complexes.

Of the three types of lipids newly absorbed into the bloodstream, the first to be removed are the neutral fats (tri-glycerides) by the fat cells in adipose tissue and by the liver, depending upon the physiological demands of the organism. The other dietary lipids are probably removed chiefly by the liver for redistribution as these lipids are taken up by the extrahepatic tissues relatively slowly.

The lipid fraction of most cells other than adipose tissue consists mainly of phospholipids and cholesterol. For example, brain tissue is rich in free cholesterol, phospholipids, and glycolipids. Most muscle tissue contains phospholipids, especially the lecithins and cephalins. The glycolipids, especially the cerebrosides, are important within the white matter of the brain and the myelin sheath of nerves. Cholesterol occurs in the tissues either as esters of fatty acids or as a free alcohol; it may be transformed by the liver into substances such as progesterone, testosterone, the adrenocortical hormones, and the cholic acid component of the bile acids and in the liver and intestinal walls and possibly the skin to vitamin D. Finally, the lipid content of the feces normally remains constant at less than 5 gms. daily and is derived partly from dietary fat but mainly from endogenous sources as intestinal secretions and bile.

Metabolism And Metabolic Abnormalities

The metabolism of lipids is dependent upon the physiological requirements of the various tissues; and a dynamic equilibrium between their synthesis and degeneration exists continuously. That is, in order for synthesis to occur, a breakdown of complex materials is necessary to provide the materials to synthesize new substances.

Fatty acids may be formed from either carbohydrates, (the major raw material) by successive condensation, reduction, and dehydration processes or from amino acids.

Basically it is synthesized in this manner. From carbohydrates and certain glucogenic amino acids, pyruvic acid is formed. The major portion of the pyruvic acid undergoes oxidative decarboxylation (removal of a carboxl group (COOH)) to form the 2-carbon fragment — active acetate or acetyl-CoA, a compound of acetic acid and coenzyme A. Acetyl-CoA is then converted to fatty acids, which in turn reacts with glycerine to form neutral fat. Insulin appears to be essential for adequate formation of long-chain fatty acids from acetate.

In lipid catabolism, the Krebs cycle is the final pathway for the oxidation of fatty acids, as well as for carbohydrates and amino acids, and thus is the chief

source of chemical energy for the cell. The fatty acids are broken down enzymatically to give acetyl coenzyme A — the 2-carbon compounds — and then metabolized in the Krebs cycle.

The acetyl coenzyme A combines with oxaloacetic acid to form citric acid, which in turn, is broken down enzymatically to oxaloacetic acid and combines with another molecule of acetyl coenzyme A. The three basic end-reactions in this cycle are (1) the decarboxylase enzymes liberate carbon dioxide; (2) the dehydrogenases remove hydrogen atoms; and (3) the cytochromes, or the electron-transmitting enzymes transfer the electrons of the hydrogen atoms to oxygen atoms with the resultant formation of water and the release of energy.

When the rate of formation of acetyl-CoA greatly exceeds the capacity of the hepatic tricarboxylic acid cycle (the Krebs cycle), condensation occurs between pairs of acetyl groups, forming aceto acetic acid known as ketogenesis. This compound may be reduced to B-hydroxybutyric acid. Since the hepatic tissues are incapable of splitting acetoacetate once it is formed, ketone bodies — acetoacetic acid, acetone (formed from the spontaneous decarboxylation of acetoacetic acid), and B-hydroxybutyric acid — are passed into the bloodstream causing ketonemia. While extrahepatic tissues are capable of splitting and oxidizing these ketone bodies, their capacity may be exceeded and ketonuria results. Thus it may be seen that normal imbalance such as inadequate amounts of insulin may initiate metabolic abnormalities involving the lipids.

Increases In Plasma And Fecal Levels

In diabetes, there is an increase in liver fat, excessive ketongenesis, hyperlipemia, and hypercholesterolemia. The increased lipid level in blood and in liver is due to excessive mobilization of depot fat, in consequence of the state of hormone imbalance in relation to adrenocortical and anterior pituitary hormones. In the insufficiency of insulin, the catabolism of fatty acids, which is unimpaired, results in the production of 2-carbon fragments which cannot be utilized adequately for synthesis of long chain fatty acids or oxidized adequately and therefore form increased amounts of acetoacetate and cholesterol.

In nephrosis, cholesterol, neutral fats and phospholipids are increased tremendously so that the plasma may be lipemic.

Obstructive jaundice, pregnancy, and hypothyroidism also cause the total plasma cholesterol to rise; chronic cholangiolitis and biliary cirrhosis also are associated with high cholesterol and phospholipid plasma levels.

Essential familial hypercholesterolemia, inherited as a dominant trait in which not all the members of the family are affected, and idiopathic hyperlipemia, a rare hereditary condition carried on a recessive gene, are characterized by extremely elevated cholesterol-phospholipid levels and lipid-lipoprotein levels respectively. There is also believed to be a relationship between elevated cholesterol levels and the development of atherosclerosis of the blood vessels and coronary artery thrombosis.

Steatorrhea, an increase in fecal fat, may occur if the emulsification, digestion, or absorption of lipids is defective. This condition may be the result of (1) absence of bile due to obstructive jaundice, (2) absence or defective formation of pancreatic juice as during chronic pancreatitis or pancreatic duct obstruction, or (3) extensive small bowel resection.

Decreases In Plasma Lipid Levels

Low plasma lipid levels are found in infants, in severe anemias, and in prolonged or severe wasting diseases. A low normal plasma cholesterol (the normal being 70% of the total) is found when there is diffuse liver cell damage as in acute infectious hepatitis or cirrhosis. The more severe the infection the greater the fall in the ester fraction. In compensated cirrhosis, plasma cholesterol tends to be in the low normal range.

Summary

Lipids represent one of the three basic sources of energy in humans. They are digested in the small intestines by the action of bile and lipase. They are then absorbed either into the lymph or portal blood systems for storage or metabolism. Abnormal elevation or reduction in lipid levels in blood are frequent. Therefore, the determination of the total lipids and their fractions may be valuable diagnostic and prognostic tools for the clinician.

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Scalene Node Biopsy

CHARLES D. MCEVOY, JR., M.D. and RICHARD C. WADSWORTH, M.D.

Since the demonstration by Daniels in 1949[1] that biopsy of non-palpable scalene lymph nodes would frequently provide a pathological diagnosis in otherwise undiagnosed intra-thoracic and intra-abdominal disease, numerous articles have been written regarding the diagnostic value, indications, and techniques of scalene node biopsy. Papers stressing the risk of this operation have recently appeared.[2,3] Controversy is apparent. A recent article by Skinner, who emphasized the limitations and hazards of scalene node biopsy, served as a stimulus for us to review 116 consecutive biopsies obtained by one of us (C.D.M.) from July 1954 through August, 1963.

In a review of approximately 1000 published cases[2,4] of proven bronchogenic carcinoma in which scalene fat-pad biopsy was performed, the incidence of positive biopsies ranged from 8.5% to 60%. For the most part, the higher percentages were noted in reports which included relatively few cases. The percentage of positive scalene biopsies in patients with sarcoidosis ranged from 60% to 100%.

We reviewed our material to ascertain the following:

1. The incidence of positive scalene nodes in suspected cases of intrathoracic malignant neoplasm.
2. The incidence of negative scalene nodes in suspected cases of intrathoracic malignant neoplasm in relation to positive and negative bronchoscopic biopsies.
3. The incidence of negative scalene nodes in patients with negative bronchoscopic examination in whom the diagnosis was established by thoractomy.
4. The relationship between positive and negative cytology smears, bronchial biopsies and scalene node biopsies.
5. The complications of operation.

Two scalene fat pads (of the 116 cases) failed to show histologically demonstrable lymphoid tissue.

The final diagnosis of malignant intrathoracic neoplasm was made in 68 patients (59% of the 116 cases). (See Table I). Of these 68 patients, 17 (25%) showed malignant cells in the scalene nodes. Only 2 of these patients had positive bronchial biopsies. One of these patients had positive cytology smears. (See Table II.) Four of the patients with positive nodes had no bronchial biopsy. Eleven had negative bronchial biopsies. Three patients with a negative bronchial biopsy had a positive cytology smear. One patient with a positive bronchial biopsy had a negative cytology smear. No patient with proven cancer in scalene nodes underwent thoracotomy.

Of the 68 patients with malignant intrathoracic neoplasms 51 (75%) showed no malignant cells in the scalene nodes. One of these scalene biopsies did show a "sarcoid-like" reaction. In this case, the presence of a bronchogenic carcinoma was demonstrated by thoracotomy. Of the 51 patients with negative scalene nodes, 22 had positive bronchial biopsies and 15 had positive cytology smears. Only 7 of the 22 patients with positive bronchial biopsies had positive cytology smears. Of the 26 patients with negative bronchial biopsies, 8 patients had positive cytology smears. One positive cytology smear was obtained from a patient from whom no bronchial biopsy was obtained.

Five of the scalene lymph nodes showed a "sarcoid-like" reaction. In three of these patients, the diagnosis of sarcoidosis was made. One patient with this finding was classified as "Undiagnosed Disease." The fifth patient in this group was found, at thoracotomy, to have a bronchogenic carcinoma.

Five of the patients showing "reactive hyperplasia" in the scalene nodes were eventually diagnosed as tuberculosis. We have had no scalene nodes showing a caseating type of granuloma.

There were 26 patients with negative scalene nodes to whom the diagnosis of "Other Pulmonary Disease" was ascribed. This includes such lesions as lung-abscess, bronchiectasis, pulmonary fibrosis, and emphysema. Bronchial biopsies were negative in 24 of these cases.

TABLE I

INCIDENCE OF MALIGNANT TUMORS IN 116 SCALENE NODE BIOPSIES

Total Malignant Intrathoracic Neoplasms	68	*% of 68 malignancies*
Malignant Scalene Nodes	17	25%
Positive Bronchoscopies	24	35
Positive Cytology Smears	20	29
Positive Thoracotomies	28	41

TABLE II

RELATION OF SCALENE BIOPSIES TO BRONCHOSCOPY AND CYTOLOGY

Total Malignant Intrathoracic Neoplasms	68	*% of 68 malignancies*
Malignant Scalene Nodes	17	25%
With Positive Bronchoscopy	2	3
With Positive Cytology Smear	1	1.5
With Negative Bronchoscopy	11	16
With Positive Cytology Smear	3	4
Negative Scalene Nodes	51	75
With Positive Bronchoscopy	22	32
With Positive Cytology Smear	7	10
With Negative Bronchoscopy	26	38
With Positive Cytology Smear	8	12

No bronchial biopsy was done on the other two patients. In nine of these patients the diagnosis was established by thoracotomy.

Eleven of the patients from whom negative scalene nodes were obtained were classified as "Undiagnosed Disease." Only one of these patients had a thoracotomy. This patient had a suspicious cytology smear and a negative bronchial biopsy. This was the only positive cytology smear obtained in this group.

One patient from whom negative scalene nodes were obtained was classified as "No Disease."

Sixty-one of the sixty-eight cases (90%) of malignant intrathoracic tumors were diagnosed as bronchogenic carcinoma.

Lymph nodes were palpable in the neck preoperatively in only 9 patients of the total (116) patients from whom biopsies were obtained. Cancer was present in biopsies from 6 patients with palpable scalene nodes. On the other hand, cancer was demonstrated in the nodes of 11 patients whose nodes were not palpable pre-operatively. The discovery of cancer in non-palpable nodes was critical in the decision not to perform thoracotomy in several cases of otherwise operable bronchogenic carcinoma.

There was no mortality referable to this operation (See Table III). However serious morbidity was noted in two patients, each of whom had transient coma and transient paralysis coming on during an operation performed under local anesthesia. Recovery without residual paralysis occurred in each instance. One of these patients also had a wound-hematoma, which required no treatment. Moderate post-operative hemorrhage, not producing arterial hypotension or requiring transfusion of blood, occurred once. Infection of the wound with Streptococcus viridans occurred in this patient. Recovery followed treatment with antibiotics, but hospitalization was extended a few days because of this complication.

TABLE III

Surgical Complications

A.	Hematoma	5 patients
B.	Hematoma plus cerebrovascular insufficiency	1 patient
C.	Cerebrovascular insufficiency	1 patient
D.	Post-operative hemorrhage with wound-infection	1 patient
E.	Staphylococcal wound infection	1 patient
	Total number of patients with complications	9 patients

Hypesthesia due to injury, usually deliberate division of supraclavicular nerves, was noted in several instances. It was not a source of disability, required no treatment and was not considered a "complication." Injury to major blood vessels and nerves, lymphfistula, pneumothorax and other potential hazards of scalene node biopsy, in contrast with the more superficial "supraclavicular" node-biopsies, did not occur.

Summary

Data are presented to assess the worth of scalene node biopsy in 116 patients. Its use in patients with suspected and proven bronchogenic carcinoma is considered in some detail. Complications of this operation are briefly recorded.

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Further Random Observations On Pernicious Anemia*

Mason Trowbridge, Jr., M.D.

The pernicious anemia laboratory occupies a small building adjacent to the Eastern Maine General Hospital. As reported previously,[1] uropepsin and serum vitamin B_{12} determinations are carried out. The possibility of substantial financial assistance in the near future is mentioned because if it is achieved these determinations can be carried out without charge.

Insufficient data have been accumulated to date to indicate that widespread use of the above screening methods are worthwhile. However, a number of interesting clinical observations have been made.

Our contention that reliance on clinical acumen alone will result often in failure to diagnose pernicious anemia have been reinforced by Hall.[2] He reports twenty-three cases of the disease seen at the Albany, New York, Veterans Administration Hospital over a period of years. In no case was the diagnosis suspected by the referring or admitting physician. When a second physician went over the patient after admission to the hospital, in only one case was the diagnosis suspected. Some of the patients were in the hospital weeks or months before the diagnosis was made. It is stressed that physicians waiting for the usual textbook stigmata of pernicious anemia before making a diagnosis are doing their patients a disservice.

It is our contention that the use of a simple screening test, a determination of uropepsin, would have saved much human suffering, as well as costly hospitalization.

Segal Uropepsin Test

We continue to find this a valuable test, particularly since pernicious anemia can usually be excluded promptly without discomfort to the patient or loss of time in the hospital as with gastric analysis. As reported previously,[1] the test is a measure of the speed with which under appropriate conditions urine will coagulate milk. Most urines will do so almost immediately, whereas those of pernicious anemia patients may not do so in an hour. Not only is this test much simpler than gastric analysis, but it will exclude more pernicious anemia suspects.

As with any test, borderline values are a problem. One treated pernicious anemia patient, originally sixty minutes, had a value of fifteen minutes. Our previous suggested value of twenty-five minutes as a cutoff point should probably be revised. It seems inevitable that a patient will be ultimately encountered in whom intrinsic factor production fails before pepsin production. Experience to date suggests that false negatives will be less of a problem than with numerous other accepted laboratory procedures.

Satisfactory results can be obtained on random urine specimens sent by mail unless the pH rises above 7.5 and inactivates the pepsin.

Serum Vitamin B_{12} Levels

The bioassay of serum vitamin B_{12} by means of Euglena gracilis is time consuming and expensive. It would not be worth while were a widespread pernicious anemia detection drive not being contemplated. However, it does help clinicians to rule out vitamin B_{12} deficiency states, and when a patient is admitted from the clinic with both low uropepsin and serum vitamin B_{12} any diagnosis other than pernicious anemia is unlikely.

One situation in which only a serum vitamin B_{12} determination will clarify the problem is in the postgastrectomy (subtotal) patient. Schilling tests are not reproducible in such patients, and there are several possible mechanisms for anemia obscuring a megaloblastic picture. Annual serum vitamin B_{12} determinations have been recommended for such patients since this is the only practical method of determining whether gastric atrophy has impaired intrinsic factor production. One author reports as many as 40% of such patients with low serum vitamin B_{12} values.

There is also a surprising occurrence of high serum vitamin B_{12} values currently of uncertain clinical importance although they suggest myelogenous leukemia. (High values may be noted in liver disease but usually only if it is clinically apparent.) Some authors contend that a high serum vitamin B_{12} level may be noted before there is any evidence of leukemia in the peripheral blood or marrow. It is also stated that whereas the usual remission after therapy is of uncertain duration, if the serum vitamin B_{12} level is depressed one may be optimistic about a prolonged remission.

Our experience is inadequate to state whether serum vitamin B_{12} assays are a useful tool in the diagnosis and management of leukemia. Dr. Castle states that he is equally interested in high as well as low values.

Sterile serum may be sent through the mail for vitamin B_{12} assay.

*This project is supported, in part, by a grant received from the Bingham Associates Fund.

Isotope Diagnostic Methods

The Schilling test based on the uptake of radioactive vitamin B_{12} is widely used. Although appearance of radioactivity in the urine in significant amounts excludes pernicious anemia with certainty, the test has certain theoretical and practical shortcomings.

If minute amounts of radioactive vitamin B_{12} are given to a normal individual, none appears in the urine. It is completely absorbed at binding sites within the body. However, if the binding sites are saturated by a massive dose of "cold" vitamin B_{12}, much of the vitamin appears in the urine including some of the radioactive material. The final results are influenced not only by varying absorption and excretion of the radioactive vitamin B_{12} but by individual variations in binding capacity. Thus the result is not an accurate quantitative reflection of intrinsic factor activity.

Urine must be collected for 48 hours, because for unexplained reasons some patients excrete little radioactive vitamin B_{12} the first twenty-four hours and a significant amount the second twenty-four hours. If the test is repeated with intrinsic factor, another forty-eight hours is required. Thus, the test is expensive if done in the hospital. Furthermore, difficulties in collecting urine are often encountered, particularly if the patient is incontinent. One large city hospital reports that 50% of its Schilling tests are invalid on large wards because of unsatisfactory urine collection.

We have previously mentioned an interest in the Sullivan[3] test, an in vitro determination of intrinsic factor activity in gastric juice. We plan to carry out this procedure when financial support becomes available. This test gives a quantitative reflection of the degree of intrinsic factor deficiency. It has long been known that there is no complete lack of intrinsic factor in a patient. Pooled gastric juice from pernicious anemia patients will result in a reticulocyte rise if ingested by another pernicious anemia patient. The Sullivan test was rigidly controlled by also feeding the gastric juice to be tested to known pernicious anemia patients and observing the enhancement of absorption of radioactive vitamin B_{12}.

Gastric juice, after inactivation of pepsin at pH 11.0, may be frozen and sent through the mail for the Sullivan test.

Proper Restraint In Making Diagnosis Of Pernicious Anemia

There is altogether too great a tendency to make a diagnosis of pernicious anemia because of perhaps a less than 0.3 Diagnex Blue test, megaloblastic marrow, and marked reticulocyte response to vitamin B_{12}. It is well known that both vitamin B_{12} and folic acid deficiencies will produce identical blood pictures, but less well known that reticulocyte responses may be highly misleading. Folic acid will bring about a hematological response briefly in pernicious anemia, and large doses of vitamin B_{12} will do the same thing with folic acid deficiency. For this reason Herbert[4] points out that minute doses, 0.5 to 1.0 microgram daily, of vitamin B_{12} must be used in the precise diagnosis of pernicious anemia. The 5 milligram tablet of folic acid is a massive dose, and daily doses as low as 75 micrograms must be used. Furthermore, the patient must have been for a week on a folic acid deficient diet. This is hard on both patient and dietitian.

The above procedure is impractical, and Herbert admits the necessity of treating genuinely sick patients with megaloblastic anemia with both vitamin B_{12} and folic acid. During convalescence pernicious anemia may be ruled out with gastric analysis, uropepsin determinations, or the Schilling test. Serum vitamin B_{12} determinations are of limited value in this differential diagnosis since they may be low in folic acid deficiency.

Considering megaloblastic anemias, proven not to be pernicious anemia, to be due to folic acid deficiency probably results in some but not too great error. We regret not being able to carry out at the present time determinations of serum folic acid. This determination is more difficult than the vitamin B_{12} assay because of the ubiquity of folic acid as a contaminant and because of its lability.

One condition which masquerades as vitamin B_{12} or folic acid deficiency and is not excessively rare is Di-Gugliemo's syndrome. This is an erythroleukemia with a megaloblastic bone marrow.

Importance Of Precise Diagnosis Of Pernicious Anemia

Many patients with megaloblastic anemia are elderly, and if they are doing well on shotgun hematinic therapy little effort is made to document the correct diagnosis. This is a disservice to the patient but also to members of his family. As methods of quickly excluding and establishing the diagnosis of pernicious anemia become more widely available, the diagnosis of pernicious anemia must be made with as must restraint as when one makes a diagnosis of tuberculosis or syphilis. Pernicious anemia has been reported as occurring in from 5 to 15% of the relatives of pernicious anemia patients. Unless identified as potential pernicious anemia patients, they might well wander from physician to physician, perhaps with no anemia, receiving everything but the appropriate therapy. Reports of pernicious anemia patients presenting with a psychosis and receiving electroconvulsive therapy continue to appear.

Atypical Pictures Of Vitamin B_{12} And Folic Acid Deficiency

We have seen a few patients in whom an aleukemic phase of leukemia was suspected initially because of severe anemia and leucopenia. Total white blood counts have been as low as 1,700/cumm. with depression of the platelet count.

This picture can occur both with vitamin B_{12} and folic acid deficiency. The white blood count has risen to

normal or slightly high values with therapy, paralleling the reticulocyte and platelet rise.

Conclusion

The diagnosis of pernicious anemia will be missed unless an aggressive approach is employed. Waiting for the classical textbook clinical and hematological picture to develop is doing a disservice to the patient.

Standard methods of diagnosing pernicious anemia may be cumbersome and expensive as well as being misleading if improperly employed. Newer diagnostic methods not requiring extra time in the hospital must be employed. Such methods are the Segal uropepsin determination and serum vitamin B_{12} assay.

When the Eastern Maine General Hospital pernicious anemia detection program becomes more financially robust it is hoped that its usefulness to Maine physicians will increase.

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The Moral Implications Of Sexual Sterilization

E. Stanley Young, M.D.

The purpose of this paper is to discuss the moral implications of surgical procedures to effect sterilization. By moral implications I mean the mores of our American culture and Western civilization generally.

These mores are the end result of many factors which influence public opinion. Historically, one of the most powerful factors has been the influence of organized religion. It seems to me that medical men have been singularly inarticulate on this subject which affects the well-being of millions, and have been willing to follow whatever course seemed most conservative and free of legal dangers.

Let us consider the development of the philosophy of organized religion on matters pertaining to reproduction. This philosophy evolved before the Middle Ages. The basic tenets of this philosophy are well known. The frame of reference in which they evolved is as follows: The earth was thinly populated; the average lifetime of a human being was probably less than 20 years; rates for fetal wastage, maternal mortality, perinatal mortality, and death from childhood infectious diseases were enormous; in short, there seemed to be a rather delicate balance between the growth potential of the human race and factors which seemed bent on exterminating it.

In this frame of reference it was entirely justifiable that the mores should favor the birth of as many new humans as possible.

Times have changed and mores must change. World population today continues to mushroom. Problems of supplying this population with food and water and space in which to function may become acute within decades. The time is easily foreseeable when national governments will be charged with the function of controlling population growth.

In this new frame of reference, new mores will evolve which are more practical than the medieval mores which are still affecting behavior today. It is time for the medical profession to search its collective soul and contribute its opinion toward an ethic which is applicable to the times in which we live.

The summum bonum of medical ethics has always been the physical and emotional well-being of the patient, and this is exactly the standard by which we must be guided in developing criteria for sterilization in 1962-63.

J. P. Greenhill, writing 20 years ago, said, "For many years the ethics of sterilization have been debated.[9] Most American, English, and Continental authors concede the right of decision to the mother and her family, after they have been given a fair presentation of all the facts. By following the Golden Rule there will be no difficulty in arranging a satisfactory course in these matters."

Current Legal Status in the United States

Sterilizations can be classified into three groups:

(1) Voluntary or non-therapeutic.
(2) Therapeutic.
(3) Eugenic.

It is with the first group that this paper primarily deals, and it is in this area that the law is most vague.

Only four states have statutes specifically forbidding or limiting non-therapeutic sterilization.[6] Ten states have statutes specifically authorizing therapeutic sterilization. The rest of the states have no legislation on this subject. Twenty-eight states have statutes specifically authorizing eugenic sterilization of certain categories of psycotic and mentally retarded individuals.

There are no statutes in most states regarding voluntary sterilization. Even non-statutory law is meager because there have been virtually no test cases to clarify the issue as to whether non-therapeutic sterilization is against public policy.[8] The obviously simple solution is for the physician to restrict his operations to "the ancient field of surgery, viz., when it is a therapeutic measure."[4] A 1932 opinion of the Wisconsin Attorney General's Office stated "the Law follows Science, in some fields by as much as a generation, for the Law can reflect the advances of Science only when they have been accepted by the people generally."[4]

There is probably no legal difference between vasectomy and tubal ligation when sterilization is indicated. This is based on a 1934 Minnesota case, Christensen vs. Thornbury. Said the court, "it was entirely justifiable for them to take the simpler and less dangerous alternative and have the husband sterilized."[2]

Current Medical Opinion and Practice in the United States

This section of the paper will quote authors from various sections of the country; the papers quoted were written during the past five years.

Savel and Perlmutter of Newark, New Jersey report on a three-year experience of the Therapeutic Abortion and Sterilization Committee at Beth Israel Hospital.[1] During the period of study a board of ten certified obstetricians processed all applications. Grand multiparity (7 or more deliveries) accounted for 51% of all sterilizations, and this indication was accorded "routine approval."

Donnelly and Ferber of Connecticut and New York call for "a broad and humane interpretation of such terms as "medical necessity" and "sound therapeutic reasons."[2] They list as a proper indication for sterilization: "multiparity to a degree affecting adversely the patient's health or well-being."

Burwell of North Carolina urges more conscientious consideration of the family's need to limit its size.[3] He reports a series of sterilizations done at Greensboro, North Carolina, Moses H. Cone Memorial Hospital. One hundred thirty tubal ligations were done in a period covering 4775 deliveries. Grand multiparity accounted for 54 cases and severe varicosities for another 15 cases.

Barnes and Zuspan of Cleveland, Ohio report on patient reaction to puerpural sterilization.[5] They found that patient satisfaction was highest if (1) the indication was grand multiparity and (2) the suggestion for sterilization originated with the patient rather than the physician. They report a series of tubal ligations; they stated, "a gravida of four or more of 32 years of age or more, who had a demonstrated failure of nonsurgical techniques of contraception, was entitled to salpingectomy."

Rieser of Atlanta, Georgia, a urologist, reports on a nation-wide survey of urologists.[6] About 50% of urologists polled indicated that they performed vasectomy for sterilization. He also pointed out the importance of technique and the possibility of failure due to:

(1) Survival of sperm from 2-12 months.
(2) Recanalization (about 10%).
(3) Accesory vasa.

Porter, Sutherland, and Brown of Arkansas reported a series of transuterine cautery of the tubal orifices.[7] All 45 patients selected for the study "were grand multiparas who requested sterilization for socio-economic reasons." They also noted a 50% failure rate with the method under study.

Craig of New York reviewed the entire subject of sterilization.[8] He concluded that, although multiparity has not been definitely established as a medical indication, more than half of all sterilizations in actual practice are done for this indication.

Te Linde of Baltimore, Maryland, Professor of Gynecology at Johns Hopkins, writing in 1946,[10] stated "great multiparity has been shown . . . to be an important factor in increased maternal mortality . . . maternal mortality rose sharply after the eighth pregnancy. In the lower brackets, one to six, it ranged between 3.55 and 3.78 per 1000 deliveries, but it soared to 11.73 per 1000 with a parity of nine or more. Eastman found chronic hypertensive vascular disease to be a common complication in this group and believed it to be the most common cause of death. Obesity, increased weight of the baby, increased incidence of transverse presentation, breech presentation, and multiple pregnancy also appeared to be factors."

Te Linde went on to make this significant statement: "Economic distress is probably the phase of sterilization about which there is the most controversy. The author believes that, within certain limitations, it constitutes a legitimate indication. The limitations are closely related to multiparity. To deny a healthy couple the privilege of parenthood of two or three healthy children simply on the basis of poverty would be unjustifiable, but to deny a couple the privilege of limiting their family, at their request, when their economic burden is already more than they can bear comfortably is also unjustifiable . . . nor is the plight of the parents the only consideration. Children born in poverty are often undernourished and miss the care that every child should be entitled to receive. The right to a decent rearing seems to us to be nearer to fundamental justice than the chance for poverty-stricken parents to have unlimited offspring. Sterilization of one or the other of the couple is the surest solution."

Summary

It is apparent from this review of the recent American literature that grand multiparity is almost universally accepted as an indication for sterilization. The degree of parity mentioned by various authors varies from four to seven. There is also a definite trend toward accepting socio-economic factors as ancillary indications to support the decision for sterilization.

In making a decision regarding voluntary sterilization, emphasis must be placed on the needs of the individual patient and her family. As with any surgical procedure, the possible morbidity and mortality must be weighed against the benefit of the operation to the physical and emotional well-being of the patient and her family.

Certain generalizations might be made:

(1) The suggestion for sterilization should come from the patient rather than the physician. An exception to this would be the patient of little education or low normal intelligence. In this case the physician may bring the subject up in a tactful way to determine her attitudes and to give her full information.

(2) Husband and wife must be in agreement and their motivation must satisfy the physician as being adequate.

(3) A parity of 7 or more might be taken as a major indication without supportive indications. A parity of 4 or more might be an adequate indication if supported by socio-economic factors or by minor medical indications such as varices, hemorrhoids, mild hypertension, obesity, and recurrent urinary infections, or by age over 30 years.

(4) The decision as to which party to sterilize will depend upon the attitudes of the couple; the estimate or surgical risk in case of the wife; and the likelihood that one party or the other may remarry.

Although the Law is almost voiceless on the subject of voluntary sterilization, the physician who operates on selected patients on the basis of multiparity may rest assured that his action is supported by a well-established medical precedent.

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Oregon Resolution Opposes FDA Ban

WHEREAS, the prescribing of antibiotic "cold remedy" combinations by the physician who sees the patient with symptoms of the common cold is a decision to be made by the physician; now

THEREFORE BE IT RESOLVED, that the Oregon State Medical Society does hereby resolve to strongly protest the abrogation of the practicing physician's privilege and duty to prescribe those medicaments which his experience and knowledge indicate to be in the best interests of his patient. — Multnomah Co. (Ore.) Medical Society **Bulletin,** October 1963.

Clinico-Pathological Conference

Eastern Maine General Hospital

Thursday, October 10, 1963

Given By: RUDOLF E. EYERER, M.D. Discussed By: HAROLD D. CROSS, M.D.

This 20 year old white female entered the hospital with a chief complaint of abdominal pain of four to five days duration.

Beginning about six days prior to admission, the patient became nauseated and before the evening began, she vomited. This vomiting has continued to the present but without hematemesis. Four to five days ago she began having a steady low abdominal pain with intermittent sharp cramps. This has shifted back and forth across the lower abdomen. She was examined on the day prior to admission and is said not to have presented the picture of acute appendicitis. On the day of admission the pain and tenderness was most pronounced in the right lower quadrant. Stools were produced three times each day being stimulated by a water enema. The last stool is said to have shown streaks of bright red blood. No flatus was passed the last three days. There is no abdominal enlargement.

Past history shows no serious illnesses or operations.

The family history disclosed that the mother, sibling and patient have had sinus trouble. The father has an ulcer which has bled. There is no history of familial disease except for diabetes on the paternal side. The patient wears glasses for close work. A year ago the patient had a strep throat and antibiotics were prescribed. She says she had a sore throat two weeks prior to admission. Again she was treated with antibiotics; type not stated.

Since her first attack of abdominal pain she has felt slowed down and constantly tired. She has kept on working but she really "dragged." She did not have any abscesses with infections in the interim and had no nasal discharge. She has had no problems with eyes or ears. She does not complain of chest pain, dyspnea, or restlessness. She has no ankle edema. There has been no recent chest x-ray; she did have a pre-employment physical a year prior to admission, which she passed. There has been no hemoptysis. She eats well; all foods without distress. There has been no melena nor acholic stools or history of jaundice. She may have to urinate once a night, there is no history of hematuria, dysuria, or incontinence. Her periods are regular; the LMP was twelve days ago at which time she bled for five days. She has had no intermenstrual discharge. Her last exposure was ten to twelve days prior to admission. Her weight has been constant.

The skin showed, about a week prior to admission, punctate hemorrhages in the region of the arm as well as over the torso. Other streaks were found on the perineum the last two to three days; but the latter may be associated with motorcycle riding.

On physical examination she appears as a large-framed girl, of more than the stated age of 20. Head, ears and nose show no signs of active or chronic infection. There is no nasal obstruction, the eyes react properly. The neck shows normal flexibility. The thyroid is not enlarged; there is no adenopathy. The chest is symmetrical; the breasts show no masses nor discharge. There is no tenderness. Over the breasts some petechiae are noted. The lungs appear to be clear to percussion and auscultation. The heart is normal in size and shape. The rhythm is regular; the rate 92. There is a soft apical systolic murmur transmitted to the base. The abdomen reveals a poorly localized tenderness in the right lower quadrant; it is nearly as tender in the supra-pubic area. There is no muscle spasm; there is minimal perineal irritation. Peristalsis reveals soft bowel sounds; they are active. Vaginal examination reveals a marital introitus; there is a moderate yellow discharge; there is no local reaction to trauma. On rectal examination the tenderness is less marked than on vaginal examination. The stool is green brown and is 1+ guiac positive. Smears for Neisseria and routine cytology smears are taken and reported as negative. The reflexes are physiologic. The clinical impression is pelvic inflammation and exhaustion.

Initial laboratory examinations reveal a yellow cloudy urine, reacting acid, with a specific gravity of 1.024. The urine is negative for albumin and sugar, but has a 3+ positive acetone. The Ph is 6.0 and there are 4-6 pus cells and rare red cells.

White count was reported on one occasion during the first examination as 20,450 per cu. mm. with a differential of 86 neutrophils, 8 lymphocytes, and 6 monocytes. RBC is reported as o.k. The red cell volume was reported at 49-50%. A repeat white count was reported as 20,100 per cu. mm.

Temperature was 100°; pulse was 114; and respirations 20/min.

Re-examination in the evening of the day of admission showed the tenderness in the abdomen appearing less but there was a complaint of a steady backache at the level of L4 and L5. Vomiting had stopped at this time.

The next morning, on the second day, the tenderness

in the abdomen appeared to be improved but the backache continued to be present. Codeine apparently relieved these pains fairly easily. There were no GU or GYN symptoms as yet. The fever remained down. The patient was on clear water and there was no vomiting. A sigmoidoscopy (21 cm) revealed a clear bowel, surface intact, and deep pink mucosa.

On the sixth day of her hospital stay she was examined by an internist who stated that there were petechial eruptions which were examined by a magnifying glass and were thought to be of embolic origin. A systolic heart murmur was noted. Blood cultures taken previously were reported as sterile. A Rumpel-Leed test was negative.

Two days later the patient was again examined by a surgical consultant and it was felt that the patient did not at that time present an acute surgical problem.

X-ray examination at that time suggested some extensive process involving the intestinal tract in the peritoneal cavity. The intestinal involvement was believed to be extrinsic rather than intrinsic. The chest x-ray was unremarkable.

On her eighth hospital day a skin and muscle biopsy was obtained with a pathology report of focal vasculitis of the dermis, possibly consistent with allergic vasculitis.

Urinalysis on that day showed little change from the first one. The serum-bilirubin test showed less than 1.0 mg, dextrose 154 mg, total protein was 4.4 gm with albumin 2.3 gm% and globulin 2.1 gm%. The urea-nitrogen was 32 mg and transaminaise (SGOT) was 24 u. A biopsy of the rectum showed fragments of rectal mucosa, with no pathological changes evident.

At this time it was decided to start the patient on steroids. The patient continued to ooze blood by rectum and a stool culture showed no pathogens.

On her tenth hospital day a bone marrow examination was reported as showing excessive granulopoiesis consistent with infection. A heterophile screening test was reported as negative, and a serum electrophoresis was essentially within normal limits. A stool was examined for parasites and no ova were found.

During her eleventh, twelfth and thirteenth hospital days, the patient seemed to improve somewhat. Her fever subsided and there were no bloody stools reported. A hematocrit on her thirteenth hospital day was 36% and the serum potassium was 3.6 mEq/1. A urea-nitrogen was 42 mg. An LE prep failed to reveal LE cells.

On her seventh hospital day a hematocrit was reported as 28% and the patient received, on the same day, 500 cc of blood. It should be stated that the patient did receive 2 pints of blood on each of her seventh, thirteenth, fifteenth and seventeenth hospital days. The patient received prednisone, a bland diet and antibiotics. (10 million units of penicillin, I.V. daily from her tenth until her twentieth day; steroids beginning from her eleventh day on.) The patient had soft stools, several times daily, but there was no blood. She ate well, without vomiting. The right leg appeared to be ecchymotic and somewhat swollen. The patient also received Thorazine.®

On her twentieth hospital day the patient seemed to have no complaints and there was no vomiting. The possibility of discharging the patient was discussed.

On her twenty-fifth hospital day, at noon time, the patient began to have "spots before her eyes" and within about 3 minutes she had a sudden onset of a generalized clonic seizure with her arms and legs flexed and her head turned to the left. She had difficulty in breathing and she was cyanotic. After the seizure ceased, the color appeared to be good and she had no complaint of headache. The pupils were dilated; the fundi appeared to be negative. The tongue protruded in the midline and there was no stiff neck. Blood pressure was 190/104 mm.Hg. Pulse was 88. The etiology of these convulsions could not be explained readily.

In the morning on her twenty-sixth hospital day, the patient suddenly expired, after having had another convulsive seizure. Autopsy permission was granted.

Discussion

Dr. Harold D. Cross: The features of the patient's illness that must be accounted for include:

1. Fatal illness in a previously healthy 20 year old female, *ca.* 4½ weeks.
2. Abdominal pain, low back pain, vomiting, bloody stools.
3. Fever.
4. Anemia, requiring multiple transfusions.
5. Tenderness, on physical examination, of pelvic structures.
6. Ecchymotic, swollen right leg, seventeenth hospital day.
7. Illness unresponsive to massive penicillin, (10^6 u. IV daily from tenth to twentieth day).
8. Illness unresponsive to massive steroids, beginning eleventh day on.
9. Terminal seizures.
10. Leukocytosis plus bone marrow suggestive of infection.
11. Some minor features of the illness, that may or may not be related, were the petechiae, early as well as mid-way in the course of the illness, a past history of strep throat one year before plus recent sore throat (treated), a soft apical systolic murmur, negative urinalysis, skin biopsy indicating vasculitis, elevation of BUN.

Some missing information that might be of help would be further clarification of the heart problem by further description of the murmur, ECG, anti-streptolysin titre, throat culture, as well as repeated blood cultures. I am uncertain whether more than one blood culture was taken; the only one I am aware of was on the first day. It is surprising that the urinalyses were so negative. Further evaluation of the abdominal contents by GI and GU contrast studies might have been helpful.

Dr. Hugh A. Smith, Radiologist: Films of the chest taken on admission disclose a normal appearing bony thorax, clear lung fields, clear mediastinum, unenlarged heart with normal appearing pulmonary vessels. There is no evidence of acute infection in the lungs.

Films of the abdomen taken at the same time disclose normal appearing osseous structures of lumbar spine and pelvis, unenlarged viscera, no opaque calculi, no evidence of small or large bowel obstruction, no sign of abnormal intra-abdominal mass, no free peritoneal air.

Study of the upper-gastro-intestinal tract performed five days later discloses normal appearing esophagus, stomach and duodenum with no demonstrable defect. The small bowel looks quite abnormal with marked hypomotility, the barium not reaching the colon until the end of twenty-four hours. The disturbance appears to be characterized by segmentation of barium, alteration in mucosal pattern in certain areas, variation in bore, some separation of loops with increased space between them suggesting thickening of the bowel wall. No one localized area, on the many films secured, clearly indicates the presence of an organic lesion such as regional enteritis or out-right neoplasm. There is some suggestion of increase in peritoneal fluid.

Colonography performed the next day was incomplete; the barium only reaching as far as the splenic flexure, the intense irritability and hypertonicity of the colon preventing further filling and causing several evacuations during the course of the examination.

Findings: The findings in general suggest a diffuse enteritis with involvement of mucosa of the small bowel in some areas and accompanied by secondary peritonitis and gross disturbance of the autonomic nervous control of the intestine. The exact cause of the enteritis is not clear. Regional enteritis with perforation and peritonitis may not be excluded. Acute leukemia, lymphoma of the small bowel, and diffuse vasculitis are possibilities.

Dr. Harold D. Cross: With the many objective manifestations of her illness and yet the apparent paucity of localizing signs, one is forced to seriously consider systemic diseases. I do not think a neoplastic disease is involved. Collagen disease, either lupus erythematosus or periarteritis nodosa seem unlikely on the basis of the extremely short course, lack of urinary findings, evidence of serositis and unresponsiveness to steroids, although none of these are strictly invalidating reasons.

Dr. Robert O. Kellogg: Gross hematuria was present, but subsided on steroids, as did her bloody diarrhea.

Dr. Cross: The biopsy was only dermis and nondiagnostic. Viral diseases are omnipresent, but I am unaware of any presenting this picture. This seems to leave bacterial infection(s) as the last category. I am unable to explain the whole process on a bacterial infection without invoking several complicating or associated illnesses. Acute or subacute bacterial endocarditis may indeed be the problem, initially or at least terminally, but I do not have an adequate explanation for the initial phase of the illness with lower abdominal pain, vomiting, later bloody ooze from the rectum. Then, the development of a swollen ecchymotic right leg strongly suggests venous obstruction, presumably due to phlebitis, the most likely source being the pelvis, since her symptoms centered in that region.

I believe infectious processes beginning in the peritoneal cavity was the source of her problems, at least initially. As her symptoms began in the lower abdomen the upper GI tract, including gallbladder, will not be considered. It is remotely possible that an ileitis was present but, with negative past history, this is discarded. The appendix lying in the pelvis could account for her initial symptomatology and physical findings with the exception of the petechiae. Pelvic abscess or peritonitis not uncommonly produce diarrhea or bloody stools or partially drain themselves into the rectum. This is how I would account for that seemingly important finding. The unresponsiveness of her illness to large doses of penicillin is almost anticipated with this diagnosis. The swollen right leg is also accounted for by phlebitis of pelvic veins. The lack of further physical symptoms is attributed to the use of steroids, which allow serious infectious processes to proceed while being masked.

The terminal events causing the seizures are difficult to account for on a central nervous system basis. Whether pulmonary emboli could have accounted for this I am not certain. I would not be surprised if there were multiple foci of infection on an embolic basis, both to the venous side (liver and lungs) as well as the arterial; thus an acute bacterial endocarditis may have been present terminally; emboli from this would, of course, explain the seizures.

I have no way of resolving the site of the presumed initially localized pelvic infection. Certainly this could have begun as an endometritis, from abortion or otherwise, or a salpingitis. In any case the symptoms and succeeding events can similarly be explained.

Pathological Discussion

Dr. Rudolf E. Eyerer: On external examination the body appears to be that of a well developed, well nourished, large framed, 20 year old white female measuring 175 cm (69 inches) in length and weighing an estimated 140 pounds. Superficial examination shows over the neck a number of petechial hemorrhages anteriorly, but no lymph nodes are palpable. The chest is normally formed, the breasts are soft on palpation, no masses are felt. Over the anterior chest and anterior abdomen there are a number of petechial hemorrhages. Both lower extremities reveal a 3+ pitting edema. The right lower leg shows a marked purple-red discoloration beginning below the knee and involving almost the entire dorsum of the right foot. At the back, in the region of the left lower thorax, there are many petechial hemorrhages. Rigor mortis is not present, livor mortis is present over the entire posterior portion of the body.

On internal gross examination there are no petechial hemorrhages seen within the peritoneal cavity but there is an estimated 300 cc of yellow-green fluid. The liver appears to be quite enlarged and the margin of the liver extends 7.5 cm below the right costal margin in the mammillary line, and 7 cm below the xiphoid process.

There are no adhesions between the visceral and parietal pleura in either cavity but there is a fair amount of yellow-green clear fluid in either cavity, (1000 cc each). The pleural surfaces show a few focal areas of interstitial emphysema.

The heart weighs 395 gms. The cardiac measurements are as follows: TV 11.5 cm, PV 7.5 cm, MV 10.0 cm, AV 5.5 cm, LVW 1.8 cm, and RVW 0.4 cm.

The epicardium is translucent and there is a moderate amount of subepicardial fat tissue along the branches of the coronary arteries at the base as well as the apex. The myocardium, generally, is of brown-red color and of moderately good tone. The left papillary muscle seems to be extremely increased in thickness and size and gives almost a swollen, edematous appearance. Along the entire surface of the papillary muscle there is endocardial hemorrhage. Cross section of the papillary muscle shows areas of hemorrhage and necrosis but these areas are well demarcated from the adjacent myocardium of the left ventricular wall. The chordae tendineae and the trabeculae carneae are unremarkable; so is the remainder of the endocardium and this includes the leaflets of the valves. The coronary arteries show no gross pathologic changes. Both atria and both ventricles contain dark red fluid blood. (Heart blood was removed for bacteriological examination and was reported as "no growth.")

The right lung weighs 771 gms and the left 625 gms. Occasionally the pleural surfaces reveal a few small petechial hemorrhages. Cross section shows all lobes to be rather wet and mottled tan-pink to brown or dark red in color. There may be a large amount of serosanguinous fluid expressed. The bronchial tree as well as the vascular tree is unremarkable.

The spleen, on cross section, is dark brown-red in color. The Malpighian corpuscles are extremely prominent as many small gray dots.

The GI tract shows the esophagus to be unremarkable; the same is true for the stomach.

Duodenum, jejunum and ileum reveal, at the site of the entrance of the vasculature from the mesentery fat, small, tiny petechial hemorrhages and congestion of the capillaries. Otherwise, the serosa is smooth and gives a gray-pink appearance. Upon opening no ulcerations are seen. There are, however, many areas of submucosal hemorrhage.

The pancreas, liver and gallbladder and lymph nodes show no significant gross pathological changes.

The right adrenal gland reveals a small cortical adenoma which measures 0.7 cm in diameter.

Examination of the kidneys shows the right to weigh 237 gms and the left 267 gms. Both kidneys appear to be enlarged and swollen. The capsule strips with ease, the surface is smooth and gives a pale gray-pink appearance. On cross section the cut surfaces are bulging, the cortex measures 0.5 cm everywhere and it gives a peculiar tan-brown-red appearance with possible multiple tiny areas of petechial hemorrhage. The calices show the mucosa to be gray to brown-red and injected. The ureters and the urinary bladder are negative, as are the internal female genitalia.

The thyroid is unremarkable, as is the musculo-skeletal system.

The lymph nodes are slightly increased in size, particularly those in the mesenteric fat and along the periaortic region.

The head shows no particular gross pathologic changes.

Provisional gross pathological diagnosis:

Henoch-Schoenlein purpura.

Myocarditis, focal involving the anterior papillary muscle in the left ventricle.

Pulmonary edema, bilateral.

Petechial hemorrhages, subpleurally.

Hydrothorax, bilateral.

Hepatosplenomegaly.

Cortical adenoma, right adrenal gland.

? Vasculitis, kidney, bilateral.

Thrombophlebitis, right lower leg.

Petechial hemorrhages, skin, multiple.

Edema both lower extremities, 3+ pitting.

These gross findings were not quite satisfactory to us and particularly the changes found within the myocardium. The changes which apparently were localized to the papillary muscle mainly, and the changes within the kidneys did not fit any of the generally known gross pathologic changes consistent with glomerulonephritis or glomerulitis.

Microscopic examination of the myocardium reveals that there are in some focal areas of the left ventricular wall, peri-vascular infiltrates which consist of polymorphonuclear leukocytes, plasma cells and lymphocytes. These infiltrates extend somewhat into the adjacent myocardium. Section of the papillary muscle shows the endocardium along one aspect to be quite edematous and thickened and heavily infiltrated by polymorphonuclear leukocytes. At one point the endocardium is covered by fibrin showing a heavy acute inflammatory infiltrate. Also noticed are small focal areas of hemorrhage. All of the heart sections show the muscle bundles, in which there is a heavy acute inflammatory infiltrate to be intermixed with extravasated blood. The muscle bundles, generally, retain their cross striations but there is, focally, a marked degree of interstitial edema. In one of the sections there is a small to middle-sized artery in which the muscular wall of the vessel is quite edematous and many of the cells appear to be vacuolated. Occasionally fibrinoid degeneration within the muscular wall is seen.

Examination of the lungs show the pleural surfaces to be essentially unremarkable; as is the subpleural space. The underlying lung parenchyma reveals the

alveolar walls to be moderate in thickness; the capillaries appear to be somewhat engorged. Generally, there is a rather diffuse inflammatory infiltrate within the alveolar walls. The alveolar spaces are somewhat irregular in size; some are rather large. Many of the spaces contain a pale eosinophilic amorphorus material consistent with edema fluid. In other areas this material is intermixed with fresh blood. Throughout the sections there are a large number of pigmented macrophages. Occasionally in some of the air passages there is some edema fluid and a fair number of polymorphonuclear leukocytes which extend, occasionally, into the immediate adjacent alveolar spaces. The vascular channels are generally unremarkable, as are the lymph nodes of the hilar region.

The spleen shows no particular histopathologic changes.

Section of the liver shows generally the liver architecture to be normally arranged. Occasionally there are small intra-cellular vacuoles of varying sizes. Portal triads reveal the usual number of lymphocytes. At one point there is a middle-sized artery in which the lumen is filled with a large number of polymorphonuclear leukocytes. The internal elastica is disrupted and shows a fair degree of fibrinoid degeneration. The wall is indistinct and edematous. The perivascular area shows a heavy acute inflammatory infiltrate arranged in a nodular fashion.

Many sections of the small and large bowel show similar vascular lesions. The mucosal epithelium in some areas appears to be superficially degenerated and in some areas there is actually necrosis, forming shallow ulcerated areas. The base of the ulcer usually is in close proximity to one of the smaller or middle-sized arteries in the submucosal area. These arteries show a heavy acute inflammatory infiltrate with necrosis and degeneration of the wall. The infiltrate forms nodules about the arteries in the peri-arterial fibro-connective tissue. The nodules about the arteries are quite frequent. The entire bowel wall, generally, reveals a moderate to heavy acute as well as chronic inflammatory infiltrate and appears to be edematous. The involvement of the arteries by acute inflammatory changes varies from vessel to vessel. In some areas there is beginning of vascular wall involvement with edema and vacuolization of the cells, while in other areas the entire histologic structure of the vessel is completely obscured and necrotic.

Examination of the adrenal gland shows arterial changes similar to those described in the GI tract. The nodule described in the right adrenal gland is well-defined and it consists of mature cells of the cortex.

Section of the kidneys show the glomeruli to be rather large and swollen. The glomerular tufts are somewhat indistinct and they reveal edema as well as a rather heavy acute inflammatory infiltrate which, in some areas, appears to be frank necrosis. In other areas there is a pink stained fibrinoid material. Red blood cells are frequently seen in the capsular spaces while in other locations the glomerular tufts are adherent to the opposite side of Bowman's capsule. The afferent and efferent arterioles are generally unremarkable. The proximal and distal convoluted tubules reveal a fairly well preserved lining epithelium. Frequently within the lumina there are granular casts, some of which are composed of red cells; others are mixed with polymorphonuclear leukocytes and red cells; while in other areas the casts appear to be hyaline in nature. The distal convoluted tubules appear to be fairly well preserved. Within the area of the lower nephron there is a fair degree of interstitial edema. The arcoid and interlobular arteries are essentially unremarkable. The urinary bladder shows no histopathologic changes.

The internal female genitalia reveal a superficial focus of endometrosis in the left ovary.

Multiple sections in the brain show no histopathologic changes.

In summarizing the gross as well as the histologic findings of this case, we feel that these lesions are consistent with "periarteritis nodosa." Prior to the last two decades periarteritis nodosa has been considered to be a rare disease. It was introduced and defined by Kussmaul and Maier and only about 70 cases were reported in the world's literature. During the next few years the number was augmented so rapidly that by 1939 Boyd found 395 reported cases. Arkin in 1930 stated that periarteritis nodosa is a specific infectious disease probably caused by a filtrable virus with an elective affinity for the arteries, the organs most commonly involved being the kidneys, heart, liver, skeletal muscles, peripheral nerves and gastro-intestinal tract. A number of publications have appeared since that time, all noting blood vessel changes, consisting chiefly of necrotizing lesions affecting the entire wall of the vessel but especially the adventitia with perivascular infiltration; the latter, microscopically, appear as minute nodules, providing emphasis for the designation "peri" arteritis. It was soon discovered, however, that periarteritis nodosa or perhaps "a" periarteritis nodosa is also found in certain instances of acute rheumatic fever and Rich and Gregory were able to produce a necrotizing periarteritic type of lesion in association with serum sickness and in cases of hypersensitivity. Because of sulfonamides having been in use since 1936, it seemed possible that a hyper-sensitivity of these drugs may have been responsible for the periarteritis, according to Rich. It has also been found that certain perivascular granulomas with necrosis of the vessel wall are occasionally encountered in instances of allergy especially in those accompanying bronchial asthma. These lesions resemble periarteritis nodosa, particularly in their necrotizing components. Temporal or giant cell arteritis also exhibits some of the features of periarteritis nodosa by showing necrosis of the media with localized periarteritis and inflammation of granulation tissue along with foreign body type of giant cells. Thus, it is evident that there are several necrotizing types of arteridies, that is "peri" arteritic lesions, all of which have some of the

features of periarteritis nodosa. As a matter of fact, it is often accepted that the lesion originally described as periarteritis nodosa is a manifestation of hyper-sensitivity, as are a number of other necrotizing angiitides including rheumatic arteritis with its fibrinoid degeneration. The pertinent question is, of course, whether or not periarteritis nodosa as originally described by Kussmaul and Maier, and as re-emphasized by Arkin, really exists as a specific disease entity, perhaps viral in origin, or whether it constitutes a form of hyper-sensitivity reaction similar to other necrotizing derivatives.

DR. RICHARD C. WADSWORTH: This most interesting and provocative case has been well discussed from the clinical, radiological and pathological points of view. Although it is impossible, in many of these cases, to identify the etiologic factor or factors responsible for the lesion, considerable work has been done on the experimental production of similar lesions in animals, with extensive study of the immunological aspects of such lesions. Furthermore, some of the human cases showing this type of vascular lesion have been shown by the fluorescent antibody technique to be associated with the presence of an antigen-antibody complex in the walls of the involved vessels; this suggests that there is a relationship between the naturally occurring arteritides and the three experimental vascular diseases, the Arthus phenomenon, serum sickness vasculitis and cutaneous anaphylaxis.

Cochrane[1] (1963) discusses the vascular lesions of these experimentally produced lesions and illustrates, by fluorescence photomicrographs, the presence of the antigen-antibody complex in the wall of involved vessels. He presents evidence to show that the interaction of antigen and antibody in the walls of the vessels leads to a series of events, that produce severe necrotizing inflammation. The exact mechanism by which circulating complexes of antigen and antibody become localized in the arterial walls is unknown. He does, however, point out the importance of the presence of polymorphonuclear leukocytes to allow the typical vascular damage to occur in the development of the lesions of the Arthus and Shwartzman phenomena. This was demonstrated in rabbits that had been made leukopenic by previous injections of nitrogen mustard. These leukocytes apparently have a dual role in the Arthus vasculitis. They are not only partly responsible for the development of the vascular damage, but they are also of benefit in the healing process by catabolizing the antigen-antibody complex and aiding in the elimination of the offending reactants.

In the case here presented, we are unable to prove the exact antigen-antibody complex which produced the vascular lesions.

REFERENCE

1. Cochrane, C. C., "Immunological Factors in Peripheral Vascular Disease," *The Peripheral Blood Vessels,* Williams and Wilkins, 1963.

Dr. Eyerer, 489 State Street, Bangor, Maine
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A Word About "Profitless Drugs"

The drug industry contributes a great deal more than we have been willing to talk about in the past. We have hidden behind a so-called ethical approach and we got hurt and badly. Little mention is made of the profitless drugs that the pharmaceutical industry maintains and keeps today for the health of the nation. How many headlines have we seen about the drug for botulism that Lederle keeps in constant supply to take care of an epidemic — with ten cases recorded in the United States in the year 1962? I have not seen this put in the **Congressional Record.** — Philip B. Hofmann, Chairman of the Board, Johnson & Johnson, to National Association of Chain Drug Stores, Washington, D.C., October 17, 1963.

Editorial

The article "Lipids and Lipid Metabolism" which appears in this issue of the Journal was, as noted, first place winner in a contest among students of laboratory technology in the State. The contest is sponsored by MAMT, the Maine Association of Medical Technologists.

For some years, the Maine group had existed as an affiliate of the American Society of Medical Technologists, a national organization associated with the American Society of Clinical Pathologists. In 1958, the Maine Association changed its Constitution to include as associate members all persons engaged in clinical laboratory work, regardless of whether they qualified for membership in ASMT, and embarked on a program of annual seminars. Objectives of these seminars have been postgraduate education, exchange of ideas, and sharing of problems encountered in day-by-day laboratory activity.

Present officers of the Association include:

President: Francoise LeClair, M.T. (A.S.C.P.) C.M.G.H., Lewiston.

President-Elect: Lt. Frank Holub, M.T. (A.S.C.P.) USAF, Dow, A.F.B.

Secretary-Treasurer: Gene Lockyer, M.T. (A.S.C.P.) USVA Hospital, Togus.

The association's activities have had enthusiastic support and participation of the Pathologists of the State.

The first annual seminar was held in 1959, at the Thayer Hospital, and one has been held each year since then. Among the seminar participants have been: Dr. Norman Zamcheck, Director of the Leary Laboratory in Boston, discussing technical aspects of liver function tests; Leanor Haley, Ph.D head of Microbiology at Yale on Mycology; Dr. William Maloney of Boston on prevention of transfusion reactions; Dr. George Meissner of Rhode Island, who discussed interpretation of blood smears and sources of error in counts in Hematology.

This year's program enjoyed the largest attendance since inception of the annual seminars, 130 technologists and technicians, 47 students of medical technology, and twelve pathologists. Three general areas were discussed, Hematology, Chemistry, and Histology. Leading the Hematology section was Kenneth Brinkhous, M.D., Chairman of the Department of Pathology at University of North Carolina School of Medicine, and winner of the Ward Burdick award for outstanding contribution to clinical pathology, made each year by the American Society of Clinical Pathologists. His topic centered around laboratory diagnosis of hemorrhagic disorders, and he discussed partial thromboplastin tests, and the pitfalls in the various techniques of coagulation testing, especially the prothrombin test. Mr. Joseph Annino elaborated on several of the widely used enzyme tests, discussing methods in detail. Mr. Annino is the author of a text in clinical chemistry, and is Clinical Chemist at the Massachusetts Memorial Hospitals.

The Histology section met for an all-day session, with care and use of the various types of microtome equipment presented by experts on these devices; and with demonstrations of special staining techniques by Dr. Gallindo of the Pineland Hospital.

Chairman of the seminar committee was Eleanor Webb, MT (ASCP), of the Augusta General Hospital, to whom much credit is due for skillful handling of the many details of the arrangements.

G.O.C.

Letter To The Editor

Daniel F. Hanley, M.D., Editor
The Journal of the Maine Medical Association

Dear Doctor Hanley:

At the suggestion of the Executive Committee of the Board of Directors of this agency, I am writing you regarding the confusion caused by the similarity of names of our Center and that of a commercial dealer.

Would it be possible to have included in the Maine Medical or Cumberland County Medical Association's official bulletin an announcement advising doctors to remind those patients being referred to us of our official title and address:

Northeast Hearing and Speech Center, Inc.
Member Agency of the American Hearing Society
723a Congress Street
Portland, Maine

Sincerely yours,
SAMUEL C. CHERASO
Secretary

State Of Maine

Department of Health and Welfare

DEAN H. FISHER, M.D.
COMMISSIONER

The Treatment Of Syphilis*

NICHOLAS J. FIUMARA, M.D., M.P.H.**

The drug of choice is penicillin.[1] In our clinics, we use an aqueous suspension of procaine penicillin G, giving 600,000 units by intramuscular injection daily, or every other day for ten doses. If this schedule is impractical, procaine penicillin in oil with 2% aluminum monostearate (PAM) is employed by the same route and in the same dose, every third day or twice a week for ten doses. But if the patient can return only once a week or is not likely to return, we at once inject benzathine penicillin G, 1.2 million units into each buttock. If the patient then does reappear the following week, the treatment is repeated.

These schedules are used for patients who have primary, secondary, latent (asymptomatic), or late (tertiary) syphilis. Patients with neurosyphilis are given a total of 9 to 12 million units. The dosage again is 600,000 units intramuscularly daily or every other day, but for 15 to 20 injections.

Infants with congenital syphilis discovered at birth or during the neonatal period should be given 100,000 units of penicillin per kilogram (2.2 pounds) of body weight, over a 7 to 10 day period. In actual practice we use 100,000 units of aqueous procaine penicillin G daily, given intramuscularly ten times, making a total dosage of 1 million units; this schedule is easier to remember. Children 2 to 10 years of age receive half the adult dose.

Patients Sensitive To Penicillin

Evidence that a patient is allergic to penicillin must be sought from his history. Physicians are concerned, not so much with delayed reactions, as with the immediate or anaphylactoid type. The use of antihistamines prior to or concomitant with penicillin does not prevent anaphylactoid reactions. There have been no immediate or delayed penicillin reactions when corticosteroids were given 24 hours before treatment and continued for one week. Relatively few cases have been treated with steroids and penicillin.

As an alternative, it is far cheaper and easier to employ the wide-spectrum antibiotics. Our first choice then is tetracycline 0.5 gm. by mouth four times daily for 10 to 12 days for all stages of syphilis except neural. In neurosyphilis, we have used 2 gm. daily for 20 days. Oxytetracycline (Terramycin®) and chlortetracycline (Aureomycin®) can be substituted for tetracycline. When prescribing oral medication, the physician should ascertain that it is actually taken. We have found it necessary at times to have patients return daily for administration of at least one daily dose, giving only one day's supply of the antibiotic at each visit.

Post-Treatment Examination

Our practice is to examine the patient clinically and serologically each month for the first year and every three months during the second year, and thereafter annually if the patient is serofast. Except for those with neurosyphilis, all patients have a lumbar puncture performed 6 to 12 months after treatment; the spinal fluid is examined for cell count and total protein, and the VDRL spinal fluid test is performed. If these results are negative, the patient receives another lumbar puncture at the end of two years; if this too is negative, no further lumbar punctures are necessary. Patients who have neurosyphilis receive a spinal puncture at intervals of three to six months, as indicated by the degree of activity of the spinal fluid.

Serologic Response To Treatment

One of the most common concerns of patients is how soon the blood test will again be normal (negative). They should be told that as a certain number of failures can be expected with one course of treatment, regular post-treatment physical and serologic checkups are essential. Should a therapeutic failure occur, re-treatment can be instituted immediately. Patients should also be aware that the serologic response to treatment will vary according to the stage and duration of the disease. A "serologic cure" will be achieved sooner in early syphilis, whereas in some patients with latent or late syphilis, a "serologic cure" may never be realized.

Treated Primary Syphilis

The patient with seronegative primary syphilis and a dark-field-positive chancre may develop a positive reagin blood test during or immediately after treatment. In a short time—usually less than three months—the patient becomes seronegative and remains so unless there is a reinfection or relapse. But the patient with seropositive primary syphilis, irrespective of dark-field find-

*This is Part II of Dr. Fiumara's paper dealing with the general subject of The Diagnosis and Treatment of Syphilis. Part I on the specific subject of the Diagnosis of Syphilis appeared in the November issue of The Journal.

**Director, Division of Communicable Diseases, Massachusetts Department of Public Health; Lecturer in Dermatology and Syphilology, Tufts University School of Medicine; Instructor in Epidemiology, Harvard University School of Public Health; Physician, Department of Dermatology and Syphilology, Boston Dispensary.

ings, may require six to nine months before seronegativity is achieved. Therefore, it is our practice to re-treat all patients who do not have a negative blood test nine months after treatment. Prior to re-treatment, the patient receives a lumbar puncture and the spinal fluid is tested for cell count, total protein, and serology. If any of the spinal fluid tests are abnormal, the patient receives a minimum of 9 million units of penicillin; otherwise, 6 million units will suffice.

The physician can expect up to 2% therapeutic failures with one course of penicillin in the treatment of primary syphilis. We have not had to re-treat more than once, in the absence of a reinfective exposure.

Treated Secondary Syphilis

The patient who has secondary syphilis must of necessity have a positive blood test for syphilis. An occasional patient will have a negative qualitative test, but a repeat examination by a quantitative test will usually reveal a prozone phenomenon. Immediately after treatment, the serologic titer will usually rise and then pursue a downward course. Within one year after treatment, about 98% of the patients will become seronegative; the remaining 2% should become seronegative during the second year. An occasional patient develops a serofastness. As with primary syphilis, if the expected serologic responses are not realized, the patient should receive a lumbar puncture and be re-treated. As a matter of practice, however, patients who are still seropositive one year after the initial treatment receive a lumbar puncture and the spinal fluid is examined. If the spinal fluid examination is negative, he is treated with 6 million units of penicillin, and if the spinal fluid has an increased cell count, total protein or positive VDRL spinal fluid test, he is given 9 million units of penicillin. In secondary syphilis, a treatment failure rate of about 5 to 10% can be expected with one course of penicillin. One re-treatment course usually suffices in the absence of re-infections.

The Jarisch-Herxheimer Reaction

About 90% or more of patients with secondary syphilis, and to a lesser extent patients in any stage of syphilis, will exhibit a Jarisch-Herxheimer reaction or therapeutic shock several hours after the first injection of penicillin. It consists of chills, fever, headache, and muscular and joint pains. The leutic lesions become more prominent, edematous, and more brilliant in color. The reaction lasts a matter of hours and can be controlled by mild sedation. The rash begins to fade within 48 hours and is usually gone by the fourteenth day. It does not occur following the second or subsequent injections. A reduction of the initial dose of penicillin does not prevent the Herxheimer reaction and in no instance should treatment be withheld or discontinued because of it.

Treated Latent Syphilis

Here we encounter the problem of the serofast case, for not all latent cases become seronegative after treatment. The patient who has had the disease for six months or less can be expected to react very much like the secondary syphilitic, except that the percentage of those with positive blood tests remaining longer than a year may be in the neighborhood of 25%. With few exceptions, these will be seronegative by the end of the second post-treatment year. Those who have had their disease for two years or less have about a 50% chance of becoming seronegative in two years.

In general, it can be said that 75% of those patients with early latent syphilis—syphilis of less than four years' duration—can be expected to be seronegative in five years or less; the remaining 25% become serofast, some for life. With late latent syphilis—syphilis of four years duration or more—about 25% become seronegative in five years or so, and the remaining 75% become serofast with very slow reduction of their serologic titers.

Therefore, it is our practice to perform a lumbar puncture on these patients about a year after treatment and if this is negative, to repeat it at the end of the second post-treatment year. If the three spinal fluid examinations, the initial one and the two post-treatment ones, are normal, no further lumbar punctures are indicated. As a matter of routine, however, our policy is to re-treat all those patients whose blood serologic titers remain fixed and fail to show any significant decline at the end of one year. Also re-treated are those patients whose blood serologic titers decline somewhat but who at the end of the first post-treatment year have quantitative blood titers 1:4 or higher.

No additional re-treatment at the end of the second or third post-treatment year appears to influence the rate of disappearance of the positive blood test.

Treated Neurosyphilis

Patients with neurosyphilis are given 9 to 12 million units of penicillin. They then receive a lumbar puncture at three- or six-month intervals, depending on the degree of activity of the spinal fluid.

At least three determinations should be made on the spinal fluid: cell count, total protein, and serology. The cell count is the most important single test and the most sensitive indicator of the degree of activity of the syphilitic infection in the central nervous system. Next in order of sensitivity is the total protein. The spinal fluid serology is essential for the diagnosis of neurosyphilis, and that is about all. It does not tell us whether the neural infection is active or inactive. The reaction with colloidal gold is a useful but not indispensable test.

Following treatment, the cell count, if initially elevated, must be within normal limits by the sixth month after treatment; if not, the patient should be re-treated. The total protein should show some decline six months after treatment, and by the twelfth month it should be well reduced but not necessarily within normal limits. If this downward trend fails to occur, it is best to re-treat.

The quantitative spinal fluid serologic test may show a decrease in titer at the end of the year but may not revert to negative for many years. Usually, when the spinal fluid serologic titer is fixed at the end of the year or shows a decline by only one tube or so, the patient is re-treated. Whether this re-treatment does anything to speed the reversal of the spinal fluid serologic reaction is questionable—but the patient usually and the physician always feel better with re-treatment.

Continued on Page 266

Maine Heart Association Notes

Critical Choice of Drug Therapy in Angina Pectoris

"The value of drug therapy in angina pectoris has been debated since Heberden's classic description . . . in 1772. . . .

"The physician himself is the most important therapeutic agent for angina pectoris. His reassurance, discussion, explanation and recommendations for alleviating stressful life situations are invaluable in the management of this disease. When using drugs, he should be guided by objective evidence of therapeutic efficacy and not by placebo response or unfounded claims. . . .

"Exercise-electrocardiographic tests are the only dependable means of determining if relief of angina has been a result of "vasodilator" or "analgesic" action. These tests can demonstrate the time of onset and duration of action of drugs which improve the oxygenation of the myocardium. The use of this method has led to the following conclusions.

"Of the long-acting agents in the nitrate series, only pentaerythritol tetranitrate (Peritrate®), erythrol tetranitrate (Cardilate), isosorbide dinitrate (Isordil®) and aminoethyl nitrate, itramine tosylate (Nilatil) produce effects comparable to those of nitroglycerin but their action is much more prolonged. Optimum benefit with any of these agents can only be achieved when the time of onset and duration of action are considered and when the administration is based on the individual patient's pattern of anginal episodes.

"Sedatives and tranquilizers, by controlling anxiety and depression, are important therapeutic aids. In most cases of angina pectoris, a sedative or tranquilizer in combination with a long-acting "vasodilator" is superior to giving either agent alone."

Reference: Russek, H. I., GP, Volume XXVIII, Number 2, pages 84-95, 1963.

The Lady Governors of the Old Men's Home at Haarlem FRANS HALS, 1580/81-1666

DEPARTMENT OF HEALTH AND WELFARE — *Continued from Page* 263

Other forms of late syphilis respond to 6 million units of penicillin. Gummas will melt away and the beginning change can be noted within 48 hours. Patients with late syphilis, including those with cardiovascular involvement, may be started on full therapeutic doses. One need not fear the Herxheimer reaction or the therapeutic paradox.

Contact Interview

No discussion of the treatment of syphilis would be complete without emphasizing the need to interview the patient for contacts. Physicians who are reluctant to do this themselves should secure the services of a skilled person from the State Department of Health and Welfare.

Patients with primary syphilis should be questioned for all contacts within three months before and after the onset of symptoms.[2,3] Patients with secondary syphilis should be questioned for contacts within the past six months before the appearance of the secondary manifestations. Those who have early latent syphilis should be queried for contacts within a one year period. The spouse of a patient with late syphilis should be examined; if positive, any children must also be tested. With congenital syphilis, the parents and available siblings should be checked.

These represent minimal standards of contact tracing. In addition, it is advisable to ask the patient with primary or secondary syphilis to take to the physician's office the friends he thinks should be examined, either because they have been exposed to the same sex partners or because they have had similar-appearing lesions. The patient's contacts are also requested to do the same. This technic, called "cluster testing," has been the means of discovering additional cases of syphilis that would not have been uncovered through standard interviewing methods.

In 1960, the contact-patient index for primary and secondary syphilis was four; this means that for every patient with primary or secondary syphilis an average of four sexual partners were named. Syphilis as well as gonorrhea had increased at a faster rate in the white than in the non-white population, reversing a trend which had prevailed for decades. Venereal diseases, as well as illegitimate pregnancies, have also been reported with increasing frequency from the middle and upper classes. Teenage venereal disease has created national concern. In 1960, infectious venereal disease among young people comprised about 23% of the total reported in the United States. Syphilis can be controlled—but you must help.

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